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DIESEL RAILWAY TRACTION

A Supplement illustrating and describing developments in Diesel Railway Traction is presented with every copy of this week's issue

Transportation Trends

"BASIC changes in Transportation and Financial Consequences," is the title of a lengthy article by Dr. Leopold Heinemann, former adviser to the German National Railways, in the American Journal *Trusts and Estates*, for March. Dr. Heinemann summarises the general situation of the American railways and those of other countries, with the circumstances leading up to the present position. His review of the American railways turns naturally on the financial outlook, and he emphasises the point that overvaluation, rather than overcapitalisation, is the problem. The \$26 billion valuation insisted on by the American railway administrations is exaggerated, even as compared with the Interstate Commerce Commission's estimate of \$22 billion as the cost of reproduction. But "reproduction cost" can no longer be considered a proper basis, and nothing but earning power counts, regardless of the original investment. We cannot altogether agree with Dr. Heinemann when he says that compared with other countries the railways of the United States have relatively better equipment and superior technical operation. Nor can we, for reasons which must surely be obvious, agree with him when he takes the operating ratio (74.87 per cent. for the American railways in 1937 as compared with 81.7 per cent. for our own L.M.S.R.) as the "key to successful financial management." It is interesting to note, however, that he is of opinion that results in Europe prove that nationalisation is not a solution for the general problem.

Moral Re-armament

It is the misfortune of movements to become identified with phrases improperly understood by many who quote them. The Oxford Group is familiar to many outside its circle by certain terms which are often wildly interpreted according to a critical fancy. So that there need be as little misunderstanding as possible about the latest approach of the group to current problems, a meeting was held in London last week at which over 100 representatives of the trade and specialised press were invited to hear the experiences of prominent business men in applying certain ethical standards to their commercial lives. The process by which a man gains the courage to transact his affairs in a manner he might previously have considered "unbusinesslike" is described as "moral re-armament," and some of the results of its application were described at the meeting which we report on page 796. Broadly speaking, the disciples of moral re-armament substitute mutual confidence and unselfishness in their business dealings for the form of suspicion that is often admired as "shrewdness." They recognise that business is the basis of modern world civilisation—that business men have international contacts—and therefore that trust and esteem in business could render obsolete the antagonisms of politics.

* * * *

The Week's Traffics

In comparison with the corresponding week in 1938 the four main-line companies report an increase of £91,000 for the past week, as against one of £132,000 for the week before that.

	18th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R.	13,000	35,000	12,000	34,000	504,000	-2.33
L.N.E.R.	2,000	7,000	11,000	20,000	551,000	-3.48
G.W.R.	1,000	23,000	8,000	30,000	116,000	-1.31
S.R.	1,000	5,000	3,000	7,000	61,000	-0.91

The following table compares the 1939 traffic position of the four companies with that in 1937:—

	18th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R.	80,000	23,000	5,000	98,000	621,000	-2.89
L.N.E.R.	44,000	36,000	9,000	87,000	494,000	-3.13
G.W.R.	25,000	2,000	2,000	25,000	66,000	-0.75
S.R.	21,000	1,000	2,000	24,000	90,000	+1.37

Compared with the first 18 weeks of 1937 the traffics of the four companies to date in 1939 show increases of £80,000 from passengers and of £146,500 from coal, but a decrease of £1,317,500 from merchandise.

* * * *

Increased L.M.S.R. Excursion Facilities

Excursion traffic is a railway business capable of greater expansion and development, and one in which there is room for still more initiative. The May issue of *Quota News*, the organ of the L.M.S.R. Commercial Department, urges L.M.S.R. Quota men to establish 1939 as a record excursion year to make up for the loss last year of some £59,000 in receipts from half-day and evening excursion traffic resulting from the disturbed European situation. For 1939 excursions to suit all tastes and purses have been arranged. Last year's nocturnal pilgrimage to Snowdon to see the sunrise, is being repeated, and similar facilities will be available this year in respect of Helvellyn and Skiddaw. There will be a day excursion to Douglas, including a cruise round the Isle of Man, and trips to outstanding army centres. For the introduction of the last-mentioned feature the increased public interest in A.R.P. and the defence forces is responsible. From St. Pancras an excursion will be run to Edinburgh, with a tour of the Borderland abbeys. The Penrith—Ullswater trip now includes a tour of Lowther Park and castle, where Lord

Lonsdale used to be in residence. Those who wish to go farther afield can avail themselves of the long-distance excursions to Western Scottish and Irish centres.

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The Railways of the United States

Mr. J. J. Pelley, President of the Association of American Railroads, contributing an article to the *Daily Telegraph & Morning Post Anglo-American Supplement* of May 8, gives an interesting general review of the United States railways. They have one mile of line for every 538 American citizens, and own 45,000 steam and electric locomotives, and 48,000 passenger and 1,800,000 freight vehicles. The number of their employees and their families reaches the 4,000,000 mark, and they carry collectively nearly 500,000,000 passengers annually, as well as over a billion tons of freight. As many as 700 passenger trains are booked to run at over 60 m.p.h. start to stop, yet despite the high maximum speeds entailed safety has never been higher. Freight train speeds also are half as high again as they were 20 years ago. The taxation bill of all the systems together totals nearly £200,000 a day. As illustrating convenience of travel, Mr. Pelley mentions that one can travel the 3,000 miles from New England to the Pacific Coast with only one change of cars, though several different railways are traversed *en route*.

* * * *

Does Streamlining Pay?

Whatever its value in fuel economy, there can be no doubt that—at any rate in the United States—the streamlined train, wherever introduced, has consistently proved a means of developing traffic. If proof of this fact be needed, it is only necessary to point to such trains as the Twentieth Century Limited, which in the first five months after it was streamlined carried 38 per cent. more passengers than in the corresponding period of the previous year. The accommodation on Zephyrs, Hiawathas, Cities of Los Angeles and San Francisco, the Daylight, and other streamliners, has had to be successively increased anything from 16 to 55 per cent. The problem of where all the new or additional passengers came from so puzzled the administrations that at least one decided to issue questionnaires to passengers, and it was found that at least 20 per cent. would have used other forms of transport if the new streamlined trains had not been available. In some cases the additional traffics have covered the costs of the new trains in a few months. Actually, it is the greatly increased comfort and speed of these air-conditioned trains that is the attraction rather than the fact of their being streamlined. The latter, however, undoubtedly has a considerable publicity value.

* * * *

Hungarian Versions of Ackermann Prints

If evidence were wanting of the lead which Great Britain gave to the whole world in the introduction of steam-operated public railways, it could be found in abundance in the way English illustrations of early railways were copied in many countries. Most of these are well known to collectors, but occasionally an unknown specimen comes to light, and so far as we are aware those reproduced on page 788 may be numbered in the latter category. They were published in 1834 in a Hungarian magazine called "Fillértár Mindennemű Közhasznú Ismérétek" Terjesztésére," which may be rendered in English approximately as the "Penny Magazine for the Propagation of All Kinds of Useful Knowledge." The two-part article which these illustrations accompanied was a brief historical survey of railways, and the pictures may

be taken as representing the most advanced of then-current practice. The drawings are obviously copied from the famous Ackermann long prints of the Liverpool & Manchester Railway, although the trains are running in the opposite directions from the originals. These Hungarian copies even show the name *Furi* on one locomotive (the Ackermann print is, of course, *Fury*), and the first class carriage inserted in a second class train bears the words "Royal Mail—W.R.—Liverpool & Manchester."

* * * *

Air-Conditioning in America

It is nearly ten years since the first air-conditioned passenger vehicle was placed in service on a railway. The Pullman Company in September, 1929, introduced an air-conditioned day car, and in April, 1930, the Baltimore & Ohio Railroad inaugurated the first completely air-conditioned train. Since that time 11,676 passenger carriages have been equipped at an expenditure in excess of \$80 million (£16,500,000). Figures recently published show that 5,055 or 67 per cent. of the cars owned by the Pullman Company in America are now air-conditioned; and of those in current operation 97 per cent. were so equipped. The types of railway-owned air-conditioned vehicles vary, but, although 90 per cent. of dining, sleeping, club, and observation cars now have this refinement, it is applied to only 29 per cent. of ordinary standard passenger stock. It is thus obvious that there is still a lot of work to be done in extending the comforts of air-conditioned travel to ordinary railway passengers. Of the 11,676 cars, including Pullmans, in service 51 per cent. have mechanical refrigeration, 35.5 per cent. ice-activation, and 13 per cent. steam ejectors. Over 300 of the vehicles have gas-engine-driven compressors.

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Accidents on the Reichsbahn in 1938

The total number of train movement accidents on the German State Railway was about 14 per cent. higher in the first nine months of 1938 than for the corresponding period of 1937; collisions and derailments were 8 per cent. higher. Against this must be set the fact that train-kilometres also rose 9 per cent. These percentages cover the old Reich, without Austria. Sixteen passengers were killed and 644 injured, 229 of them through their own carelessness, or 0.024 per million passenger-kilometres, compared with 0.020 in 1937. Servants killed or injured came to 1,159, 881 through their own fault. In Austria 47 passengers and 128 servants were injured, 43 and 107 respectively through their own carelessness. The worst train accident was at Borken, Westphalia, due to a shunting engine moving foul of a train; 16 lives were lost. There was a serious derailment at Klitzschen, due to points being moved prematurely, which cost four lives. Two level crossing collisions, in which buses were run down, cost 21 lives. Of the 249 level crossing accidents in the old Reich, 51 were due to neglect to close the barriers, and 198 to the carelessness of road users. There were 39 collisions with road vehicles at level crossings in Austria, all due to the fault of their drivers.

* * * *

Running Sheds and Coal Consumption

It is well known in locomotive sheds that engines which work the same trains day after day and are known to be in a good state of repair will unaccountably show large differences in coal consumption between two separate periods. To explain an increase, those in charge of the sheds can either invent a cause and trust that it will pass muster, or challenge those items over which the shed has no control, such as coal weights and miles run. It

was suggested by Mr. G. M. Pargiter, in his paper entitled "Economic Locomotive Shed Operations," read at a meeting of the Institution of Locomotive Engineers, that the latter alternative was by far the safer. It should be remembered that at depots where there are no passenger engines, coal consumption in lb. a mile will be slightly higher than at a shed having all types of engines. This, as the author remarked, does not imply that passenger engines are bound to consume less coal than freight engines, but the records and the point-to-point timings entered by passenger drivers on their vouchers are practically an exact measure of the actual performance, whereas in goods engine returns shunting mileage is not always accurately allowed for. It was suggested that odometers or other apparatus for measuring the mileage run be provided. A limited number only would be required and could with advantage be sent round the districts and applied to engines working regular rostered trains as well as those on unrostered work but regularly covering the same ground. By this means the actual mileage figure for these trains would be known.

* * * *

The New Ebbw Vale Steelworks

Ebbw Vale, that Monmouthshire valley which is part of the vital mineral-producing area of South Wales, has been associated with steelworks for over a century and a half. As a site it is favoured with many natural advantages, such as the presence of essential raw materials, coal, limestone, &c., a remote situation in case of war, and the proximity of suitable outlets to the sea, while there is an excellent railway system in direct connection with two main lines, and no lack of suitable skilled labour. For many years, from the inception of the Ebbw Vale Company in 1868, the industrial history of this valley progressed smoothly, and during the 15 years prior to 1910 the population increased by no less than 75 per cent.; in 1921 it reached 35,283, possibly the maximum. The effect of the closing down of the major portion of the company's plant in 1929 needs no emphasis, for it was a ruinous blow to the locality. In 1934 Ebbw Vale was officially listed as one of industry's "black spots." The gloom lifted in 1935, when Richard Thomas & Co. Ltd. decided to revive the steel industry in the valley, with new works, planned, constructed and equipped on the most modern lines. The site is approximately $2\frac{1}{2}$ miles long and $\frac{1}{4}$ mile wide. The company also acquired an iron-ore field in Northamptonshire, five collieries, and limestone quarries. The new establishment, which is briefly described on page 785, is now running at nearly 70 per cent. of its capacity of half a million tons of sheet steel and tinplate a year.

* * * *

Hammer Blow Tests in America

When the New Haven 4-6-4 express locomotives were placed in service in 1937 to operate accelerated trains, they at first caused some damage to the rails. This was remedied by reducing the proportion of reciprocating weights balanced, but it led to an investigation into the effects of counterbalancing at very high speeds. As described in a paper by Mr. T. V. Buckwalter and Mr. O. J. Horger to the New York Railroad Club on February 17 last, some novel and instructive tests were made with a variety of modern heavy locomotives. The method was to mount on the locomotive a cinematograph apparatus so that slow-motion pictures of the main driving wheel at its point of contact with the rail could be taken. The locomotives were then worked up to speeds in the neighbourhood of 60 m.p.h. by the time they had reached a section of track with greased rails. The throttle was kept open until driving wheel speeds up to a maximum of

164 m.p.h. had been reached, during which period the camera was at work. On certain of the locomotives the driving wheels lifted as much as 1 in. when slipping at high speeds. Where the weight of the reciprocating parts was kept down by the use of high-tensile materials and careful design, and the overbalance was not high, it was shown that there was no risk of damage to the track at the highest practicable operating speeds. The results observed by the tests were correlated with a mathematical analysis of the forces involved, taking into account wheel and crankpin diameters, total weight on the driving wheels, the unsprung weight, the counterbalance weight, the stiffness of the driving wheel spring, and the stiffness of the track, and it was found that the calculated speed at which the driving wheel began to lift agreed closely with the results observed.

* * * *

Lightweight Motion Parts

Many new problems are associated with the design of modern high-speed locomotives, not the least of which is that of avoiding undue track stresses. The application of lightweight components of both the reciprocating and rotating parts will probably be an essential feature of such locomotives for their satisfactory operation. It will be generally agreed that such weight reductions are desirable, but there may be some question as to whether satisfactory designs are available. At the same time performance records indicate the advisability of making such departures from conventional practice. According to the authors of the paper quoted in the foregoing note, a record of the operation of 64 locomotives used on several American railways for the heaviest and fastest passenger and freight service showed a total mileage of nine million. All these locomotives have lightweight reciprocating parts, and 14 have in addition lightweight rods and roller bearing crankpins. These 14 engines have a total accumulative service of 1,700,000 miles, but, as with all phases of development, some failures have occurred. Generally speaking, however, the results have been extremely encouraging, and we agree with the authors when they state that much credit is due to the railways which have contributed to the success achieved.

* * * *

L.M.S.R. Quota Enterprise

At twenty to five one morning a Watford constable noticed a man proceeding down the High Street in the direction of Bushey. His suspicions were aroused—at 3.40 a.m. the nocturnal prowler can endeavour to pass himself off as the milkman going to begin his round, but at 4.40 Moreover, the "suspicious character" bore, presumably, no device indicating the nature, blameless or otherwise, of his calling, and his explanation that he was proceeding to Bushey & Oxhey station to begin his day's work as booking clerk did not sound convincing in the cold, grey light of the approaching morn. Accordingly policeman and *soi-disant* clerk went, together, to the railway station. But the constable's *soupçon*, shaken when entrance to the booking office was effected in the customary way, was dispelled over a cup of tea. Anon they chatted, and the constable mentioned that he was going on holiday on the morrow. The L.M.S.R. man saw his chance. "You've been after me; now I'm after you," he said, and then and there he sold the policeman a monthly return ticket to his destination. So one more Quota man demonstrated his flair for turning unusual situations to good account, and added another episode to the monthly budget of similar stories published in *Quota News*, the journal of the L.M.S.R. Commercial Department.

Constitution of the Public Corporation

ONE of the characteristics of recent British practice in regard to public service undertakings has been the establishment of what has come to be called the public corporation. The underlying idea is a compromise between government or municipal ownership on the one hand, and private ownership on the other. Such corporations have been formed by Act of Parliament as mergers of the existing operators in a particular area and sphere of public service, and have been granted monopolistic powers. The Act of incorporation commonly charges the body so established with specific duties and responsibilities (though sometimes with but vague arrangements for enforcement); requires the undertaking to be financially self-supporting, and to fix its charges with this object; and specifies the method of appointment of the governing board. It is in the last-named respect that the public corporation is particularly distinctive. Entire government or municipal appointment is avoided, as this is the main objection in many quarters to public ownership, in view of the probability of political and electoral considerations influencing the matter. Again, appointment by stockholders is considered to place too much importance on the purely financial aspect of a monopolistic body charged with public duties. In the case of the London Passenger Transport Board, appointing trustees carry out the task, and these trustees hold office rather in view of their professional eminence than through any experience in transport.

One of the oldest of these public corporations is the Port of London Authority, which has just completed thirty years of operating life, and, in view of the possibility of the extension of the public corporation idea in the field of transport, it is opportune to consider the form of the P.L.A. The constitution of that authority as laid down by the Port of London Act, 1908 (and as amended by subsequent Acts), is designed to provide a board of appointed and elected members representative of all interests in the port. There are ten appointed members, of whom two are nominated by the Ministry of Transport (originally by the Board of Trade), one by the Admiralty, four by the London County Council, two by the Corporation of the City of London, and one by the Corporation of Trinity House. Of the remaining 18 members, 16 are elected by shipowners and merchants, one represents the public wharfingers, and one the owners of river craft. The chairman and vice-chairman are elected by the authority and may be drawn from outside the ranks of the appointed and elected members. The total membership of the authority may therefore be 30, all of whom serve without any form of remuneration. The present board is 29 strong, the Chairman, Lord Ritchie of Dundee, being neither an appointed nor an elected member.

The board is elected triennially and there is no restriction on re-appointment or re-election of members. Vacancies arising during the three-year periods are filled by co-option. Labour is represented on the board by two members, the Ministry of Transport and the London County Council being required to appoint one each of their members after consultation with such organisations representative of labour as they think best qualified to advise them on the matter. The basis for the election of members is a register covering a period of twelve months preceding the election and consisting of payers of rates (e.g., port rates, river tonnage dues, dock dues, and warehouse charges), wharfingers, and owners of river craft. Owing to the impossibility of forming a register of electors prior to the institution of the new régime, the first "elected members" were appointed by the Board of Trade after consultation with various bodies representing London's trade and shipping interests. Including the present board,

87 members have served the Port of London Authority during its existence of 30 years, and two of the present members have served throughout the period 1909-1939. They are Lord Ritchie of Dundee and Captain Sir Ion Hamilton Benn. Since 1909 the board has been reconstituted on eight occasions, the triennial period between 1913 and 1919 having been bridged by a special order of the Board of Trade to avoid the reconstruction of the board during war conditions.

* * * *

Railway Memorial Windows at Longmoor Church

THE dedication last Sunday of the five railway memorial windows of the St. Martin's Garrison Church of the Royal Engineers' Railway Training Centre at Longmoor, which is recorded on p. 793 of this issue, is the consummation of an idea which occurred to Mr. Gilbert Szlumper, now General Manager of the Southern Railway, just over three years ago. On April 26, 1936, a service was held to dedicate a reredos erected at the suggestion of a former Commandant, Colonel L. Manton, in memory of the railway troops who fell in the great war. This was a major step in elevating to a beauty worthy of its associations and purpose a church that had of necessity in its early days been somewhat austere furnished. In fact, in a speech after the dedication service, reported in our issue of May 1, 1936, Major C. A. Langley, then the R.E. Churchwarden, commented upon the contrast between the beauty of the reredos and its extremely simple surroundings. The designer, Mr. Martin Travers, had the alternative either of adopting a scheme in accordance with the setting of the reredos at that time, or of looking ahead to a day when the church would be further embellished. He wisely chose the latter course. Mr. Szlumper was so impressed by Major Langley's enthusiasm that he asked if he would not welcome a gift of some windows from the British railways to commemorate their men who fell in the great war, and at the same time to add some beautification to what was then a rather bare structure. Quite naturally Major Langley welcomed the proposal, and Mr. Martin Travers was requested to produce some designs. In the issue of THE RAILWAY GAZETTE for May 1, 1936, in an editorial note regarding the dedication of the reredos and the beautification of the Garrison Church, it was stated that an interesting feature of the scheme was the possible provision of four stained glass windows each representing one of the four main-line railway companies which provide the personnel of the Supplementary Reserve Units. The note, moreover, stated "It is to be hoped that the main-line railway companies will consider this part of the scheme favourably by each arranging to present a suitable window." In due course the designs were submitted to the railway companies and the London Passenger Transport Board, with the result that each of these undertakings agreed to subscribe the cost of their respective windows. Mr. Szlumper, in common with many other railway officers, has a great regard for the Royal Engineers' Training Centre at Longmoor, and there was no doubt that the presentation of these memorial windows strengthens the already strong bond that exists between the Longmoor Training Centre and the railway companies. The beautiful windows designed by Mr. Martin Travers are illustrated on p. 792. The memory of sacrifice by the men of many railway companies is enshrined in these windows, for the L.M.S.R. of today represents the amalgamation of 34 wartime companies, the L.N.E.R. of 33, the G.W.R. of 34, and the Southern of 19, while there were in the war period five independent London tube or underground railways.

The Nizam's State Railway

WE have been favoured by Major E. W. Slaughter, the General Manager of the Nizam's State Railway, with a copy of his preliminary review of the working of the system for the financial year ended March 31, 1939, pending the issue of the full annual report in June. Gross earnings of both rail and road services were lower than in the previous financial year, while working expenses were higher. The decrease in railway earnings was mainly due to a reduction in the tonnage of highly rated goods traffic, coinciding with a fall in passenger receipts. The number of passengers carried was greater (9 millions against 8½ millions in 1937-38) but the average journey was shorter. As regards the increase in expenditure, this is explained by the fact that the additional low rated traffic exceeded the reduction in the tonnage carried at the higher rates, while at the same time more passenger trains were run, in the public interest. Moreover, unusual delays were experienced at Bezwada junction, involving, in wagon hire alone, an increase of over a lakh of rupees (£7,500). Under the head of goods traffic, although the total was greater than in the previous year (3 million tons against 2½ millions) the amount of cotton carried was considerably less. The reduction in earnings in this commodity alone must be about 4 lakhs (£30,000), or more than the total decrease in gross earnings. The preliminary figures relating to the working for the year compare with the actual results of the two previous financial years as follows; the totals are shown in lakhs of rupees, with the approximate English equivalents are in brackets:—

	1936-37	1937-38	1938-39
	Actual	Actual	Forecast
Gross earnings	252	274	272
	(£1,890,000)	(£2,055,000)	(£2,040,000)
Working expenses	133	144	149
	(£998,000)	(£1,080,000)	(£1,118,000)
Net earnings	119	130	123
	(£892,000)	(£975,000)	(£922,000)
Nizam's Lines	112	123	116
	(£840,000)	(£923,000)	(£870,000)
Government of India	7	7	7
	(£52,000)	(£52,000)	(£52,000)

The question of providing rail transport facilities for the Adilabad district has now been settled by the decision to construct a new metre-gauge line over 100 miles in length, and the work has already been taken in hand. This extension will join the main line at Mudkhed and will terminate at Adilabad. A considerable traffic is expected in cotton and there are large deposits of iron ore in the district. A new branch to serve the sugar factory at Bodhan was completed and opened, and in the first season no fewer than 28,000 tons of cane were carried. A project for a broad-gauge line between Purli and Aurangabad is now under consideration, with an alternative proposal for the conversion to broad gauge of the Puona-Manmad section of the Hyderabad Godavery Valley line and the Parbhani Purli Railway, which would give a through broad-gauge route to Bombay. Improvements continued to be made in passenger train services, fast goods trains, and in rolling stock and catering. Approximately 7 per cent. of stock has been rebodied during the year, as part of an extensive coach rebodding and replacement scheme. All compartments of rebodied coaches, including third class, are now being fitted with ventilators. Practically the whole of the metre-gauge stock has now been fitted with high tensile drawgear as an added safety precaution. Catering continues to receive attention, especially for third class passengers, and on certain branch lines travelling vendors now serve passengers at all stations. Experiments have been made with a modern fly trap, to be issued shortly to several stations. Some 130 concessions in passenger fares and coaching rates, and 495 reduced

goods rates were granted during the year, and "Travel-as-you-like" tickets were issued on three occasions. A novelty in railway enterprise in India is the new State Railway Hotel at Aurangabad.

As regards the road services operated by the railway administration, the mileage worked during the year (4,069) was slightly greater than in the previous year, and the fleet was increased from 358 to 391 vehicles. We hope to make some further reference to this in our Road Transport Section. Further progress has been made with the development of air transport facilities and aeroplanes are now available for charter to the public to any centre in India where there is a suitable landing ground. Staff matters continue to be a first concern of the administration, and the section charged therewith also deals with the social services. A new welfare centre has been established at Lallaguda, and other amenities have been introduced. The extent of the encouragement given to the social, recreational, and health services, is denoted by the fact that an outright expenditure is involved of some Rs. 68,000 (£5,100) and an annual recurrent expense of about Rs. 12,000 (£900).

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The History of the Injector

MR. L. J. KASTNER prefaced his interesting paper on the exhaust steam injector, read to a meeting of the Institution of Locomotive Engineers, by a few facts about the history of locomotive injectors. It was, he said, in 1858 that a Frenchman, Henri Giffard, who had been studying the possibilities of developing light steam-driven motors for balloons, patented a new form of boiler feeding apparatus which he called a "self-acting injector." This combined remarkable compactness and low weight with an entirely original method of using the energy of the boiler steam to pump the boiler water to the required pressure. Soon after its appearance in France, the injector was introduced into England by Sharp, Stewart & Company, and into America by the Sellers Company. Later the possibility of using some of the heat going to waste in the exhaust steam attracted experimenters who were interested in the injector, and in 1867 Alexander Morton of Glasgow obtained letters patent for "improvements in the lateral action or induction of fluids." He described an injector by which, it was said, steam at low pressure could be made to force water into a boiler at high pressure. There seems, however, to be no evidence that he ever made such an apparatus. The first injector using exhaust steam for forcing a jet was made in 1876. Much exhaust steam was condensed, and a very respectable economy obtained, but starting up with almost all injectors at this time was difficult. The design of this instrument was largely due to the late James Metcalfe who invented many of the refinements which have made the exhaust steam injector a practical success.

L.N.E.R. MAIN-LINE IMPROVEMENTS.—The crossing from the up slow line over the main lines to the down goods line and down siding at St. Neots L.N.E.R. station is to be removed. This crossing has been the cause of a speed restriction at St. Neots, which is on the main line between King's Cross and Edinburgh. At the same time, the layout of the lines at the station is to be improved to enable stopping trains from the North to run direct into the east side of the station instead of running through the station and being backed into the platform as is at present necessary. A siding capable of holding 60 wagons is also being provided.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The L.N.E.R. "Meet the Sun" Campaign

London & North Eastern Railway,
Marylebone Station, N.W.1, May 8

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—It is difficult to understand Mr. C. Grasmann's motive in writing the letter headed "South for Sunshine" which you print in your last issue. The Southern Railway slogan, we are told, is "one of those realities similar to the fact that the sun rises in the east"—the very fact upon which the L.N.E.R. campaign is based!

The real note of our propaganda has been caught by a critical friend who wrote on May 8:—

"This week-end we have been fortunate to 'meet the sun on the East Coast' in full state. I like your new war cry. It's quite in the spirit of 'Skegness is so Bracing,' and the frolicsome touch in your bright posters is a relief from the stolidity of the 'square deal.' You didn't lose any time in announcing the Easter sun records for East Anglia, but spare us any more statistics, please. No dial can measure the glories of an East Coast morning. So let us go on meeting the sun there and enjoying the invigorating breezes from the North Sea. That's the best tonic I know for keeping you fit and good humoured in these troubled times."

Yours faithfully,

C. DANDRIDGE
Advertising Manager

Unintentional Track Spirals

28, Hunters Grove, Kenton, April 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The twisting of track in corkscrew fashion, as illustrated in the interesting photograph reproduced on page 702 of your issue of April 28, is not unknown in countries where a cloudburst may lead to the passage over a railway of a large volume of flood water of great velocity and carrying sand and debris; but certainly four complete turns must be a record. The explanation you offer is no doubt the correct one.

My reason for writing this is to say that I have a photograph showing a somewhat similar "corkscrew" in railway track, with two turns, caused by an avalanche. This occurred in the year 1902, on the Argentine Transandine Railway. The avalanche was that known as *Las Leñas*, and

the case is interesting, not only because the spiral effect was produced by snow, but also because at the point in question the track (metre gauge) was Abt rack, with a three-bar rack and steel sleepers. The avalanche therefore had to bend the equivalent of three rails, and evidently, also, the effect must have been produced in a relatively very short space of time. I ought to add that the track was actually cut and the broken ends, with their spirals, were left at right angles to the original line. All ballast and formation was swept away in the track of the avalanche.

I am, Sir,

Yours faithfully,

GEORGE L. BOAG

[Our correspondent's photograph is reproduced below.]

Safeguarding Valuable Documents and Records

Research Co-ordination Committee,

35, Gordon Square, W.C.1, April 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The war scare of September, 1938, had at least one useful consequence—it showed the complete absence of any co-ordinated plan for the preservation of valuable scientific and other documents against the hazards of air warfare. Such attempts as were made by individuals or institutions to remove important papers to places of greater safety merely served to emphasise the impossibility of handling at short notice the quantity of material involved. Unfortunately, it cannot yet be said with any confidence that the risk of war has disappeared, and it is essential to take steps now to meet any future emergency. The Research Co-ordination Committee has accordingly been investigating the possibilities of micro-film technique for this purpose.

Briefly, the micro-film process consists in photographing documents of any kind, such as charts, pages of books, loose sheets, maps, &c., on to standard 35 mm. cine film. Documents up to 17 in. x 24 in. can be dealt with (or larger ones in two or more sections). The photographs are preserved in negative form on acetate safety film, which when tightly rolled is far more resistant to fire than any paper record. Working with quarto papers (10 in. x 8 in.), 1,600 facsimiles can be obtained on 100 ft. of film. This micro-record occupies only one-twentieth of the volume of the original. Full-size prints can be made from it at any time, or it can be read in a special projector, or thrown on a wall-screen for lectures.



Track spirals on the Argentine Transandine Railway caused by the avalanche in 1902 known as "Las Leñas"



Left : The track of the old Blisworth Railway crossed by the L.M.S.R. Olney-Towcester line. Right : "The commodious wharf" at Northampton today

The special camera used, capable of dealing with 500-1,000 documents an hour, is expensive and the majority of institutions and persons would not have sufficient use for it to justify purchase. The case for a co-operative organisation is clear, and the Research Co-ordination Committee is anxious to know what degree of support for a micro-film service would be forthcoming from scientific and other organisations, and also from individuals having personal documents, such as research notes, charts, &c., which they wish to reduce in bulk for storage. It is estimated that the overall cost of micro-records would be of the order of one-halfpenny a quarto document, possibly less if a sufficient volume of material is handled, and preliminary arrangements have been made to undertake such work. I shall be glad to hear from anyone interested in the proposal.

Yours truly,

L. E. C. HUGHES, PH.D.,
Hon. Secretary

Northampton's First Railway

Essex House,
Essex Street, Strand, W.C.2

May 2

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Since writing my article on Northampton's First Railway I have acquired a copy of Telford's Report of May, 1805, on the Grand Junction Canal, from which one learns that the down-grade on the line from the canal to Northampton was

- (a) near the Canal 2 inches in 100 yards (1 in 1800).
- (b) in the middle part $\frac{3}{4}$ inch in a yard (1 in 48).
- (c) along the Meadows on the Bank of the River Nen 4 or 5 inches in 100 yards. (1 in 900 to 1 in 720).

Telford's report adds that at the termination of the rail-road a very commodious wharf had already been formed (a photo of which, as it is today, is enclosed). The accounts for the half year from September 26, 1804, to March 25, 1805, appended to Telford's report show that during that period £937 2s. 2d. was expended on the "Rail Road to Northampton."

I am obliged to Mr. Arthur J. Brawn for calling attention, by his letter in your issue of April 5, to the later section (in fact, Section C11 of the original Grand Junction Act of 1793, lurking under the marginal reference "Powers to make Rollers or inclined Planes, &c.," which gave the company alternative powers to make railways instead of waterways. It was presumably under these powers that the company made (pending the construction and opening on March 25, 1804, of the Blisworth tunnel) the temporary railway over the hill at Blisworth the iron rails of which (as quoted from Telford's report in THE RAILWAY GAZETTE of March 3, 1939) were transferred to the Northampton Railway.

Telford in his report recommended in regard to the Blisworth Railway that "the space which has been occupied

by the late Rail Road over the Hill, by being repaired will answer the purpose of a Road for the Horses, and I think the whole breadth should be retained in the Company's possession." Over a distance of some 600 yd. from the Stoke Bruern (or South) end of the Blisworth tunnel such road still exists as shown in the enclosed photograph.

In conclusion I would add that reference to a King's Printers copy of the Act of 1805 substantiates Mr. Brawn's criticism that *Railway Road* is therein hyphen free, but the use there made of the two separate words railway road, a synonym for the customary "rail-road" or "rail-way" is—so far as I am aware—unique, and I therefore maintain the claim of Northampton's First Railway to be regarded as Britain's One and Only Railway Road.

Yours faithfully,

KENNETH BROWN

Railway Capital

Royal Pier Hotel, Southsea

May 1

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—It is impossible to consider capital reduction for the railways with any measure of fairness without analysing the nature of railway capital. Many besides myself must have been astounded to read in your issue of April 21 that "only about 25 per cent. of issued railway capital is in the form of ordinary stock." What is the precise nature of the other 75 per cent.?

Great injustice has resulted from capital reductions in other industries owing to the treatment of bank-created credit on an equal footing with genuine investment of savings. If railway shareholders would escape a similar fate it is imperative that they should obtain an inquiry into the origin and nature of that huge financial superstructure amounting to 75 per cent. of the issued capital. Without doubt it will be found that the situation could be relieved by the reduction or even elimination of much of the interest payable on that superstructure without necessitating any sacrifice at all to individuals as such, whether shareholders of railways or of banks. Such an inquiry would reveal the points at which adjustment could be made without hardship, for it is almost certain that, with a financial structure so top-heavy as you have indicated, there will be found scope for much modification that would bring relief to the railway; long before there is any need to consider the bleeding of genuine investments of shareholders.

Yours faithfully,

R. L. PEARSON

[The article to which our correspondent refers stated that "the pre-ordinary stockholders, secure in their legal rights, would not voluntarily submit to being deprived of any of such rights"—Ed. R.G.]

PUBLICATIONS RECEIVED

L.M.S. Magazine (May issue).—

Great variety in text and illustration characterises the current issue of this magazine. It brings a foretaste of holidays in an article on Southend, a poem on Llandudno, and a double-page of Blackpool pictures. More specifically transport interests are catered for by an article on railway travel in the Isle of Man, and a description of track-packing methods from the old beater system to the present practice of measured shovel packing adopted by the L.M.S.R. Railway history appropriately finds a place, for it was on May 30, 1839, that the Midland Counties Railway was opened, and readers of the magazine are accordingly given an account of how Nottingham, Derby, and Leicester were linked by rail. Locomotive matters are covered by the usual M.I.C. feature, and by No. 18 in the "Looking Backwards" series. This widely-ramified survey of motive power inherited from the constituent companies by the L.M.S.R., and now extinct, has this month reached the interesting byways of the Stratford-on-Avon & Midland Junction, the Leek & Manifold, and the Knott End Railways. A page of picture news epitomises topical events in very digestible form.

Grossdeutsche Verkehrswirtschaft: Vierte Verkehrswirtschaftliche Tagungsveranstaltung vom Institut für Verkehrswissenschaft an der Universität Leipzig und vom Leipziger Messamt.

(Transport Economics in Greater Germany: Fourth Transport Congress under the auspices of the Institute for the Science of Transport, Leipzig University, and the Leipzig Fair.) Leipzig: Verlag von Felix Meiner. 9½ in. × 6½ in. 60 pp. Price not stated, but probably about 1 RM.—This booklet is the eighth of a series issued under the editorship of Professor Karl Bräuer, who contributes an introduction, and deals with the transport problems arising from the incorporation of Austria in the Reich and the creation of Greater Germany. It is in the form of three lectures of moderate length which were given at Leipzig University by Herr W. Kleinmann, Deputy General Manager of the German State Railway, Herr W. Luz, a Director of the German Lufthansa, and Herr O. Fleischmann, of the Reich Postal Department. All three lectures are based on the conception of a unified, co-ordinated, and planned scheme of transport and communications for the whole of German territory and the closest scheme of co-operation with other lands, especially those considered to lie in the German sphere of influence. The first treats the general problem, the second the air routes in Germany and connecting her with the world at large, the last the German postal services. Considerable attention is paid to the measures taken immediately after the *Anschluss* and since vigorously pursued, resulting in a great improvement in all transport facilities, and postal, telegraph, and

telegram services in Austria. All three lectures are most informative and framed in clear style.

My Fifty-One Years at Euston.

By R. Carrington Willis. London: G. Bell & Sons Ltd., York House, Portugal Street, W.C.2. 7½ in. × 5 in. × 1 in. 208 pp. Price 5s. net.—This is the story of a varied life, related with as much relish and gusto as it has been lived. The author began his career as a ticket boy on the old L.N.W.R. at Euston, and when he retired it was from the position of Registrar of the L.M.S.R. During the war he was a Government inspector of railway accounts and subsequently a judge of railway staff appeals. After this, finding time hanging heavily, he worked out on his own initiative a merger scheme which formed the basis of that adopted for the 1923 amalgamation. In his spare time he has been a teacher of dramatic art, an actor, a religious worker, a farmer, and an energetic supporter of the Labour Party. In these circumstances it was only to be expected that he would continue his active life into retirement. Indeed, retirement has meant for him more time to serve his fellow-men, and it has allowed him to pursue even more actively his favourite pursuits of politics, farming, finance, and entertaining. He has, of course, made hosts of friends, and delights to invite them down to his home in the Chiltern country. A man who has set out "to make the best of life," he regards it all as a wonderful experience, and, still in harness after threescore-and-ten-odd years, can look back with satisfaction on a full life.

The Case for the Railways.

Published by the New Zealand Railways.—This excellently-illustrated 32-page booklet is introduced by the Minister of Railways in a foreword which concludes with the motto of the department, "The best possible service at the lowest possible cost." Points made are: That the Government Railways are the most valuable property of the Dominion, and, unlike commercially-owned systems in other countries, were established by the State as a public service and convenience to aid the settler and business man, to develop the producing districts, and to open up undeveloped areas as only railways can. The fact that the public owns the railways is specially stressed. The railway-owned road services and all the modern developments taking place are enumerated, such as engineering and signalling improvements, elimination of level crossings, passenger and goods traffic facilities—including air-conditioning, modern locomotives, the extended use of railcars, and electrification. There are illustrations of most of these activities, and notably of Thermit welding a rail joint, track doubling, deviation to improve gradients and curves, signalling at an automatic crossing loop, an electric switch-locked siding, large bridges, a new road overbridge, "K" and "G"

class locomotives, two types of electric locomotive, a multiple-unit train, two types of railcars, and a number of views of Wellington station.

Scandinavia.—The North is being rediscovered. More and more people—the late Karel Capek, whose "Travels in the North" is already recognised as a gem among travel books, was one—are falling under the spell of the Northern lands. Some would-be travellers to Scandinavia hesitate because they think that it is expensive. A glance, however, through "Scandinavia," a holiday handbook issued by Thos. Cook & Son Ltd., will dispel such fears—a nine-day holiday in Copenhagen, the metropolis of the North, costs only £8 17s. 6d., and at the other end of the scale is the Grand Tour of Scandinavia, embracing Denmark, Sweden, and Norway, at 32 guineas. The person would be hard to satisfy who could not find in the 150 pages of this handbook just the holiday he wanted. The book is an invitation to all to come to the friendly and level-headed Northern countries, with which we have so much in common.

Unit Dust Collectors.—One of the stipulations of the new Factories Act, 1938, was that "all practicable measures" should be taken to protect employees from inhaling dust from any mechanical process. The Visco unit dust collectors which are described in a new catalogue we have received from the Visco Engineering Co. Ltd., Croydon, have been designed to give such protection during grinding or polishing processes. They are compact plants, made in four types to suit different duties. The "bag" type of unit is designed particularly to meet conditions in factories where polishing is done.

MODEL CORONATION SCOT FOR PRINCE EDWARD.—An electrically-driven model of the L.M.S.R. Coronation Scot train, made by Bassett-Lowke Limited, of Northampton, was accepted by the Duke of Kent on behalf of his son, Prince Edward, at the Electrical Development Association's annual luncheon recently. It was the gift of the association, presented by Brig.-General R. F. Legge, C.B.E., D.S.O., Comp.I.E.E., the Chairman. The railway company, at the request of the association, granted the model locomotive a special number, 6235, and it has been named *Prince Edward*. This is believed to be the first time a model has borne an official name or number before its prototype has been built for general service. The train is 7 ft. long, consisting of an engine, tender and four coaches, all painted in the blue and silver livery of the original train. Its scale size is ⅝ in. to the foot, and its full speed is equivalent to 120 m.p.h. Prince Edward, who is three years old, is still rather young to play with the train. After the expiry of the Duke of Kent's governor generalship in Australia in three years time, it will be set up for him, complete with rails, by the Electrical Development Association.

THE SCRAP HEAP

The National Safety First Association suggests that the Ministry of Transport should have a road accident branch with duties analogous to its railway branch.

Boots, the pet of the workmen at the new Los Angeles railway terminus, which is to cost £2,250,000, held up the completion of the air-conditioning system for several days because she chose one of the air tubes as the birthplace of her kittens.

MOVEMENTS OF WARSHIPS

The British destroyers *Wistful*, *Wendy*, *Whimsy*, and *Wilful* left Gibraltar for Malta, while the French destroyers *Pourquoi*, *Pourboire*, *Bon Soir*, and *Oh La La* left Malta for Gibraltar.

Later in the day the British destroyers *Hurtful*, *Hateful*, *Harmful*, and *Horrid* left Malta for Gibraltar, while the French destroyers *Mais Oui*, *Mais Non*, *Mademoiselle*, and *Mal de Mer* left Gibraltar for Malta.—*Nathaniel Gubbins* in "The Sunday Express."

FROM CAMBRIDGE TO OXFORD

I went over to Oxford today. I took the 9.30 train from Cambridge and got to Oxford at 1 o'clock. There was an hour's wait at Bletchley which was very nice as there were plenty of trains going through.

MEETING AT OXFORD

The L.M.S.R. station was quite deserted when I got there, but a dirty notice told me to get a platform ticket at the booking office. I walked round several times and came to the conclusion that they didn't keep one—at any rate all "holes in the wall" were securely shut up. Eventually I saw a porter leaning against a pillar looking half asleep, and enquired whether I was right for the 1 o'clock from Cam-

bridge (I was beginning to wonder whether trains ever really penetrated it) and he, so to speak, opened one eye, said "Oh, I expect so," as though the 1 o'clock from Dublin or Paris or anywhere else might equally well roll in. However, eventually, a lost looking little train did drift in in an absent-minded way—from which my friend emerged.

CHECKING 4,000,000 TICKETS

Towards the end of February last, the London Passenger Transport Board conducted a test of all the traffic on its railways. The object was to record the various routes taken by passengers, and tickets were therefore checked at exchange stations in addition to the customary checks made at stations of departure and arrival. Nearly 4,000,000 tickets—enough to fill 120 1-cwt. sacks—were collected. They are now being sorted into sections covering 50,000 pairs of stations. Officials stationed at the interchange points punched the tickets with 30 different symbols that, in combination, showed which of 174 different interchange routes were taken

by the passengers on their journeys. At the interchange points 250 men were on duty. London Transport values highly these tests, the last of which was made in 1936.

The Royal train in which the King and Queen are to tour Canada will be driven over the Kenora section of the C.P.R. by locomotive engineers Peter Heenan and Hugh McKinnon. The first named is in public life the Hon. Peter Heenan, a minister in the Ontario Government; Mr. McKinnon is also an M.P. George Moulds, who fired the train which carried the Duke and Duchess of Cornwall and York to Ottawa in 1901, will drive their Majesties from Montreal to Ottawa, and Howard Chase, Chairman of the Brotherhood of Locomotive Engineers and Firemen's Negotiating Committee, will drive the Royal train between Edson and Edmonton.

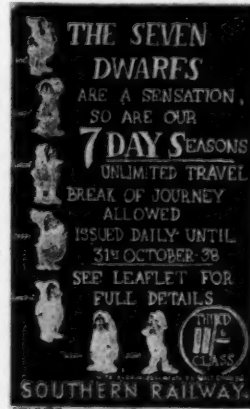
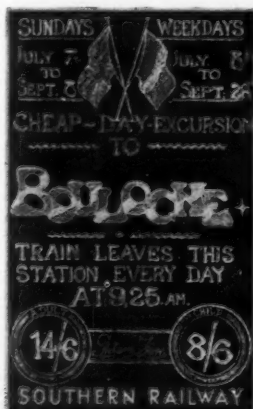
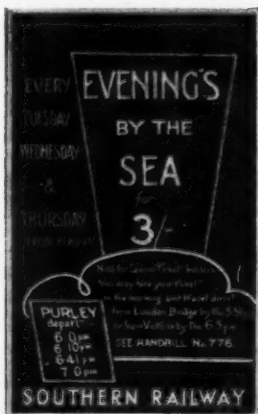
THE GOLDEN WAY

When Pullman cars my thoughts entice

I do not wish to pay the price
Of travel in their soft embrace
To any far, romantic place,
But crave that minor indiscretion,
A ride from Baker Street to Chesham.
Oh, London Transport—dreaded board,

Who monthly from my meagre hoard
Of savings takes the greater portion
In third class seasonal extortion
— Undemocratically I thirst
To travel with a Pullman first.
How sweet to loll in lordly wise
And with detachment scrutinise
Those meaner folk who must compete
With tooth and nail to find a seat.
Quick, a libation! Here's a health
To private means, to unearned wealth!

Yet who am I, with little cash,
To dream of making such a splash.
Seductive dream, dissolve away!
My season—it expires today.
I must pursue with secret scorn
The humble path for which I'm born.



Winning entries in a competition for chalk or crayon posters by station staff recently held on the Southern Railway. There were 73 entries

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

INDIA

Dacca Mail Collision

With reference to the serious collision on April 17 at Majdia on the Eastern Bengal Railway main line, when the Dacca mail ran into the stationary Northern Bengal express [recorded in the Notes and News section of our issue of April 21—Ed. R.G.] it now appears that 35 persons were killed, including the guard of the express and two members of the Bengal Legislative Assembly, and 40 injured. Single-line working was restored by 11 a.m. on the same day, but the second line was not cleared until the afternoon of April 18. It is understood that the driver and two firemen of the Dacca mail, who are reported to have jumped from the engine before the crash, have been arrested and released on bail, but it has not yet been ascertained how the mail approached unchecked on a line that was blocked. Inquiries by the Senior Government Inspector and the Police are proceeding.

Rolling Stock Programme—1940-41

The interim rolling stock programme for 1940-41 formed the principal item in the agenda before a recent meeting of the Standing Finance Committee for Railways. It is understood that the committee agreed to the purchase of 20 "XE" class broad-gauge locomotives, at an approximate cost of Rs. 35 lakhs (£262,500) chargeable to capital. The complete programme for the purchase of rolling stock during 1940-41 is yet under consideration by the Railway Board and will come up before the committee in July next. The present meeting approved of the proposal to renew, for a further period of three years, the contract with wagon-building firms in India for the supply of about 5,000 broad gauge wagons in the three years 1940-44 at the rate of 1,650 wagons per annum. The cost in this respect for 1940-41 has been estimated at about Rs. 260 lakhs, nearly £2,000,000.

Features of Railway Budget Estimates: Eastern Bengal Railway

In the revised figures for 1938-39, the operating ratio of the Eastern Bengal Railway, including depreciation, is reckoned at 82.5 per cent. against 79.4 in the accounts for the preceding year. For 1939-40, the operating ratio, including depreciation, is estimated at 82.8. Excluding depreciation, the figures for 1937-38, 1938-39, and 1939-40 were and are 65.0, 68.2, and 68.4 respectively.

Though the gross receipts for 1938-39 were expected to be Rs. 2 lakhs more than in the preceding year, due to increased passenger revenues, the increase of about Rs. 20 lakhs in working expenses on account of repairs to

flood damages, increased repairs to rolling stock and rise in the price of coal, have adversely affected the operating ratio. The gross receipts for 1939-40 are placed at the same figure as the revised estimate for 1938-39, but the working expenses are increased by Rs. 1½ lakhs, due to additional repairs to rolling stock and to increased cost of coal. The special expenditure incurred during 1938-39 on repairs to flood damages will be counterbalanced by the increase during 1939-40 in the annual instalment of repayment to the Depreciation Fund.

East Indian Railway

In the revised budget for 1938-39, the operating ratio of the East Indian Railway, including depreciation, is put at 60.7; in the estimates for 1939-40 it is 61.3 against 60.5 in the accounts for 1937-38. The corresponding figures, excluding depreciation, are 49.1, 49.5, and 48.8 respectively. The total gross receipts for 1938-39 are expected to exceed those of the preceding year by about Rs. 5 lakhs. The increase of Rs. 9 lakhs in the working expenses is due largely to increased repairs to locomotives and to higher freight charges on coal. The total receipts for 1939-40 have been estimated at Rs. 24 lakhs lower than the revised figure for 1938-39 which includes receipts from the exceptional Kumbh Mela and eclipse traffic. Working expenses are expected to be lower by Rs. 2 lakhs. The increase expected in the cost of coal is more than counterbalanced by the fact that the annual instalment of repayment to the Depreciation Fund on account of expenditure on repairs to earthquake damages will cease with 1938-39.

Fire in Railway Carriage

A short time before the Bombay—Calcutta mail was due at Jubbulpore on April 17, passengers in a third class coach noticed smoke emanating from a top corner of the carriage. The communication chain was pulled and the fire was extinguished. The train proceeded only about a mile when it had again to be stopped for the same reason. The woodwork in the affected corner was hacked away with an axe and the coach was detached at Jubbulpore. The cause of the fire has not been ascertained yet.

SPAIN

Three Per Cent. Surcharge on Tariffs

A Ministerial Order of March 28, published in the *Boletín Oficial* of April 4, approves the payment to the railway companies, in varying proportions, of the proceeds of the three per cent. surcharge on tariffs, under the

Decree of July 29, 1932. The amount thus to be paid is 2,772,526 pesetas, which will be distributed, as an addition to wages, among the employees of the companies. The number of employees concerned is 48,026, and the amounts payable will be 59.40 pesetas to each man of the first group and 27.30 to each in the second group.

DENMARK

Rail and Tramway Co-operation and Revised Fares in Copenhagen

The proposed co-operation between the State Railways' Copenhagen suburban services and the municipal tramways has been agreed by both parties and came into force on May 1. The outer suburban fares from Copenhagen were readjusted on a new basis from the same date. Hitherto all distances to the west have been calculated from Copenhagen Central and all distances to the north from Østerport, but now distances between Copenhagen and all stations to Roskilde and Helsingør inclusive are being reckoned from Nørrebro, which is the most centrally situated of the stations in Copenhagen, and at the same time the one with the heaviest passenger traffic. To compensate for the increased fares entailed, all tickets between Copenhagen and the outer suburban stations mentioned are available to or from any station on the Copenhagen city line (Hellerup—Copenhagen Central—Valby—Vanløse—Frederiksberg—Nørrebro—Hellerup). The increase in fare is especially noticeable on the shorter outer suburban stretches, amounting to as much as 25 per cent. for season as well as for single or return tickets in extreme cases.

Randers-Aalborg Improvements

In connection with the doubling of the Randers—Aalborg main line, opportunity is being taken to improve the alignment at several points, notably just north of Randers and south of Hobro, where lengthy deviations are being made, at Randers in order to eliminate several important main road level crossings, and at Hobro to improve gradients and curvature.

New Great Belt Ferry Vessel

The new diesel ferry for the Great Belt crossing was taken over by the State Railways on April 13. It is named *Storebalt*, and it is very similar to the three older three-track diesel ferries *Korsør*, *Nyborg*, and *Sjælland*. In outward appearance the most noticeable difference from the older vessels is that the two funnels are arranged one abaft the other instead of side by side. The main engines are two-stroke instead of four-stroke as in the three other ferries, and the horse power is somewhat higher, enabling a maximum speed of 16½ knots to be reached instead of 15½. The greater speed is of no use for shortening the duration of the crossing as long as the other vessels are slower, but it will be

valuable in making up lost time. The new ferry has cost about Kr. 3.5 million and taken 14 months to build; the makers are A/S Helsingør Jernskibs- og Maskinbyggeri, Helsingør (Elsinore).

Proposed Lolland-Germany Ferry

The old plans for a ferry connection between Rødby, on the south coast of the island of Lolland, and Fehmarn, in Germany, now seem to be reviving. According to statements made by Dr. Kleinmann, Deputy General Manager of the German State Railway, in a lecture to the Dano-German Society and in interviews with the press, the German State Railway is interested in this connection, which would mean a very considerable curtailment of the distance between Copenhagen and Hamburg. The ferries would be fitted to carry both railway vehicles and automobiles. The expenses on the Danish side would be fairly considerable if the full benefit of the new connection were to be obtained. It is true that there is already a railway connection to Rødby, but it is *via* Nykøbing, which is a considerable detour, and the bridge across the Guldborgsund at Nykøbing cannot carry heavy main-line traffic; the latter remark also applies to the Nykøbing-Maribo—Rødby line, which is at present in private hands. It would probably be necessary to build a new direct line from the south end of the Storstrøm bridge *via* Guldborg—where the Guldborgsund would have to be crossed by a new railway bridge, there being only a road bridge there at the moment—to Maribo, and to strengthen the line from there to Rødby; to these expenses would have to be added the cost of building the ferry terminal and a new ferry. It has also been proposed to establish a motorcar ferry between Rødby and Fehmarn, as there will shortly be direct road connection from the Storstrøm bridge to the Guldborg bridge, thus completing a direct route from Copenhagen to Rødby; through public traffic would be effected by motor-coaches operated by the Danish State Railways and the German State Railway, which would cross the Baltic by the ferries in question. If built as a railway connection, a curtailment of no less than $4\frac{1}{2}$ hours on the present running time between Copenhagen and Hamburg was foreshadowed, but this, presumably, entails the introduction of a fast international railcar service between the two cities. At any rate it is to be hoped that the matter will now be taken up for serious consideration.

New Large Road Bridge

Work has recently begun on yet another large bridge, this time to carry road traffic only. It will connect the island of Møen, south of Zealand and east of Falster, with Zealand, between the points of Kalehave, on Zealand, and Koster, on Møen. The length will be about three-quarters of a mile (about the same as the Little Belt

bridge), and in appearance it will be similar to the Storstrøm bridge except for steeper gradients on the approach spans. The clear headway below the navigation spans will be the same as for the Storstrøm bridge (26 m. = about 85 ft.).

In connection with this Møen bridge, a road embankment with a short fixed bridge in the middle will be constructed to connect the island of Bogø, between Falster and Møen, with Møen and thus with the main islands of Zealand and Falster. A similar road embankment will be built off the south-west coast of Jutland to connect the island of Rømø with the mainland.

EIRE

Livestock for Market: Farmers' Strike

In order to vent their grievances in respect of regulations, restrictions, and taxation the County Dublin Farmers' Association arranged for a one-day strike and demonstration on Thursday, April 20. The method employed was to suspend the forwarding of cattle to the Dublin market and the holding of the cattle and sheep market on the date in question. Thursday in each week is Dublin cattle market day, and the railway companies bring into Dublin from stations from 15 to upwards of 100 miles distant, the cattle for sale in that market, the average number of livestock wagons used for this purpose each week being about 600. Owing to the strike the Great Southern and the Great Northern Railways sustained a loss of about £2,000.

It would appear that application was made, unsuccessfully, to the railway companies for reduced fares to the demonstrators who, of course, are responsible for serious loss of revenue to the companies.

GERMANY

New Underground Station at Potsdamer Platz, Berlin

The new Reichsbahn underground station at the Potsdamer Platz in Berlin (illustrated in THE RAILWAY GAZETTE of April 21) was opened on April 15. Its construction necessitated important engineering works in connection with neighbouring buildings, the present elevated and underground railway routes, and the provision of space for the future Ringbahn lines, which are eventually to use the station. At present this is to form the terminus for the City (Stadt) lines coming in from the north. The interior has been given a bright appearance by glass facings, tiles, &c., and aluminium alloys have been widely used for railings, gratings, notice frames, and so on; German products are used exclusively. Escalators have been installed, and there are 17 booking windows, with subway connections

in several directions to the main station and the various streets. The extension of the train services from Unter den Linden to the new station gives greatly improved facilities. All tickets available through the Potsdamer station can now be used over this section, with transfer to the main lines, improving communication between places such as Velten and Oranienburg and those to the south along the Wannsee and other suburban lines. The effect has been to create four semi-circular areas of local services, known as the north, south, east, and west "rings" respectively, and from May 1 season tickets for each area have been issued, and the previous limitations on the City and Ring tickets abolished. New fare rates are also now in force for ordinary and season tickets.

Increase in Railway Technical Staff

An indication of the extensive new works contemplated by the Reichsbahn is given by the advertisements now appearing in the press for new entrants to the technical service, including the civil, mechanical, electrical, signal, and automobile engineering sections. The statistical branch is also to be strengthened. The advertisements offer good prospects and excellent working conditions, including generous illness and other insurance benefits. There has been much comment of late on the dearth of engineers, and many proposals have been heard for improving the position, one reason for which is said to be the belief of many young men that they attain better and more comfortable positions sooner in the armed forces than elsewhere, but the authorities are fully alive to the necessity of ensuring that civil employment shall not be neglected.

JAPAN

Finances and Traffics in 1938-39

The Imperial Government Railways with their 10,800 route miles of line and 220,000 employees registered record receipts in the year ended March 31. Total revenue exceeded Y. 725,000,000, Y. 410,000,000 accruing from passenger, and Y. 315,000,000 from freight traffic. The total revenue was $15\frac{1}{2}$ per cent. higher than in the previous year, and the increase is attributed to the boom in heavy industries caused by the war in China. The number of passengers carried was 1,336,665,000 and the metric tonnage of goods hauled was 95,800,000. Further industrial expansion this year gives rise to an expectation of even higher receipts in 1939-40.

Central China Transit Company

Mr. Makoto Den, of the Japanese Ministry of Railways, has been appointed Vice-President of the Central China Transit Company, shortly to control railways in the Japanese-occupied regions of Central China.

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table for January, 1939, as compared with January, 1938, compiled from the Ministry of Transport Statement No. 230

Description	Great Britain*	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.
PASSENGER TRAIN TRAFFIC—					
Number of pass. journeys (ex. season ticket holders)	98,503,086	6,282,214	12,990,993	20,826,207	17,609,209
Increase (+) or decrease (—)	— 4,147,893	— 295,065	— 918,993	— 1,441,088	— 230,441
Passenger receipts (excluding season ticket holders)	£3,408,686	£415,136	£660,615	£978,034	£774,155
Increase (+) or decrease (—)	— £100,473	— £9,242	— £19,010	— £47,707	— £5,984
Season ticket receipts	£1,077,526	£68,570	£195,504	£271,813	£359,500
Increase (+) or decrease (—)	— £2,520	— £1,632	— £5,455	— £6,113	— £12,995
Parcels and misc. traffic receipts (excluding parcels post)	£955,735	£173,603	£303,542	£355,639	£107,103
Increase (+) or decrease (—)	— £29,262	— £6,715	— £10,035	— £9,748	— £1,877
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	20,780,006	5,076,094	9,183,926	9,943,777	1,205,062
Increase (+) or decrease (—)	— 1,992,308	— 298,752	— 1,201,245	— 837,428	— 38,457
Net ton-miles (excluding free-hauled)	1,217,277,097	227,154,755	405,406,227	502,139,722	49,661,110
Increase (+) or decrease (—)	— 119,077,782	— 19,033,180	— 41,671,967	— 53,806,630	— 1,316,617
Average length of haul (miles) (excluding free-hauled)	58.58	44.75	44.14	50.50	41.21
Increase (+) or decrease (—)	— 0.10	— 1.05	— 1.09	— 1.07	— 0.22
Freight traffic receipts	£6,721,227	£1,143,000	£2,224,915	£2,786,000	£355,232
Increase (+) or decrease (—)	— £471,257	— £36,046	— £236,396	— £164,000	— £12,059
Receipts per ton-mile	1.325d.	1.21d.	1.32d.	1.33d.	1.72d.
Increase (+) or decrease (—)	— 0.033d.	— 0.06d.	—	— 0.06d.	— 0.01d.
Freight train-loads : Average train-load (tons)	126.68	130.92	131.64	126.60	98.12
Increase (+) or decrease (—)	— 4.81	— 5.83	— 4.25	— 4.08	— 3.35
Net ton-miles—					
Per train engine-hour	927.45	1,000.49	980.86	891.80	744.23
Increase (+) or decrease (—)	— 4.78	— 0.90	— 3.23	— 23.48	— 13.67
Per shunting-hour	863.43	776.46	959.38	907.30	535.85
Per total engine-hour	447.15	437.18	485.00	449.74	311.54
Net ton-miles per route-mile per working day	2,695	2,689	2,841	3,217	1,066
Increase (+) or decrease (—)	— 368	— 306	— 416	— 470	— 70
Wagon-miles. Total	343,649,909	62,445,827	119,852,886	144,673,513	16,355,435
Increase (+) or decrease (—)	— 19,099,215	— 2,457,390	— 7,802,331	— 8,857,982	— 49,639
Percentage of loaded to total	66.00	67.87	63.77	67.00	66.42
Wagons per train. Total	33.64	33.09	34.31	33.84	30.33
Increase (+) or decrease (—)	— 0.12	— 0.60	— 0.07	—	— 0.19
Loaded ..	22.20	22.46	21.88	22.67	20.14
Empty ..	11.44	10.63	12.43	11.17	10.19
Train miles. Coaching—Per train-hour	15.08	13.95	14.06	14.11	18.42
Per engine-hour	12.19	11.10	10.84	10.94	15.78
Train-miles. Freight—Per train-hour	8.62	9.24	8.74	8.24	9.28
Per engine-hour	3.53	3.36	3.74	3.54	3.13
Engine miles. Total	45,946,768	7,383,337	12,552,551	16,782,338	6,431,172
Increase (+) or decrease (—)	— 1,156,673	— 134,003	— 616,184	— 711,586	— 299,744
Mileage run by engines. Total train-miles—					
Coaching	23,196,374	3,134,197	5,217,044	7,303,187	4,885,651
Freight	10,214,135	1,887,020	3,493,439	4,275,751	539,240
Engine-hours in traffic. Total	4,993,856	870,784	1,488,655	1,949,222	500,262
Increase (+) or decrease (—)	— 239,624	— 26,389	— 87,036	— 135,924	— 10,167
Shunting miles per 100 train-miles—					
Coaching	7.45	7.06	6.87	7.78	8.45
Freight	72.83	84.00	67.21	68.47	94.46

Passenger Traffic Statistics: Number of journeys, receipts, and receipts per journey (excluding season ticket holders)—January, 1939

Subject	Great Britain	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.	Cheshire Lines	Liverpool Overhead	L.P.T.B.†	Mersey
Full fares—									
Pass. journeys ..	33,438,550	587,101	868,644	1,214,632	2,764,481	12,242	179,643	26,997,639	83,569
Gross receipts ..	£859,649	£67,523	£104,427	£109,752	£196,731	£2,256	£1,874	£362,482	£1,444
Receipts per pass.	6.17d.	27.60d.	28.85d.	21.69d.	17.08d.	44.23d.	2.50d.	3.22d.	4.15d.
Reduced fares—									
Excursion and week-end—									
Pass. journeys	33,288,478	3,259,211	7,550,980	10,954,328	7,943,215	349,682	87,315	1,551,492	678,746
Gross receipts ..	£1,755,582	£260,441	£398,868	£608,746	£398,568	£18,455	£841	£32,697	£9,877
Receipts per pass. journey	12.66d.	19.18d.	12.68d.	13.34d.	12.04d.	12.67d.	2.31d.	5.06d.	3.49d.
Workmen—									
Pass. journeys	28,528,273	2,040,112	3,855,079	7,714,063	6,208,570	275,392	271,302	6,987,718	276,682
Gross receipts	£430,114	£31,191	£65,260	£128,977	£104,176	£4,630	£2,368	£79,935	£2,400
Receipts per pass. journey	3.62d.	3.67d.	4.06d.	4.01d.	4.03d.	4.03d.	2.09d.	2.75d.	2.08d.
Other—									
Pass. journeys	3,241,386	394,674	714,881	940,118	692,193	25,504	58,813	352,247	9,221
Gross receipts	£354,048	£54,520	£89,968	£125,627	£73,928	£3,666	£409	£3,128	£165
Receipts per pass. journey	26.21d.	33.15d.	30.20d.	32.07d.	25.63d.	34.50d.	1.67d.	2.13d.	4.29d.
Total—									
Pass. journeys ..	98,503,086	6,282,214	12,990,993	20,826,207	17,609,209	662,862	597,073	35,889,096	1,048,218
Gross receipts ..	£3,408,686	£415,136	£660,615	£978,034	£774,155	£29,049	£5,492	£478,242	£13,886
Receipts per pass.	8.31d.	15.86d.	12.20d.	11.27d.	10.55d.	10.52d.	2.21d.	3.20d.	3.18d.

* All standard gauge railways

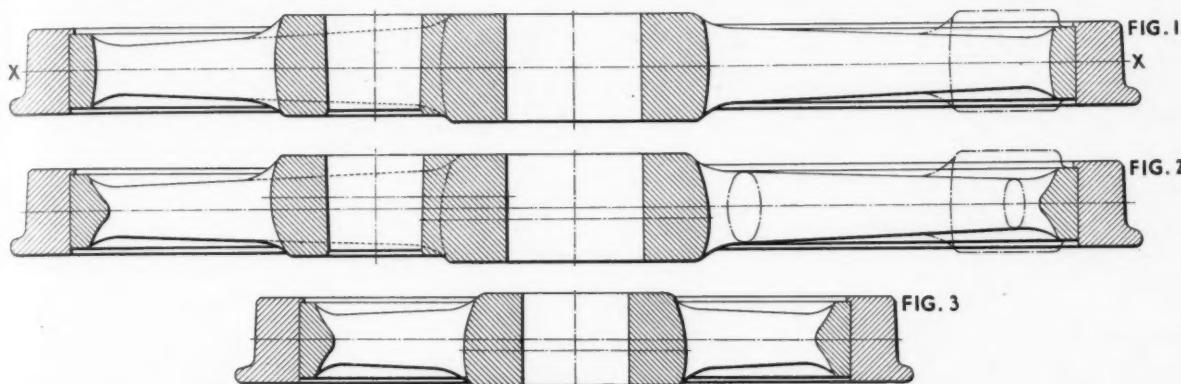
† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

LOCOMOTIVE WHEEL CENTRE DESIGN

(From a correspondent)

THE design of locomotive wheel centres provides a very interesting study, ranging from the early forged units—a masterpiece of the smith's craft—down to the modern steel castings. The latter would appear to mark finality in the progress of this detail so far as the process of manufacture is concerned, but the suggestion is seriously submitted that the design as it stands today on thousands of modern locomotives is by no means the best that can be attained. It is, furthermore, affirmed that the design of the wheel centre has been very largely handicapped by the desire to simplify

subsequently maintain this support in the region where it will best counter the tendency to work loose on the axle. This tendency is repeated millions of times in the life of the wheel. The design of the rim shown in Fig. 1 leaves much to be desired, but that illustrated in Fig. 2 is greatly superior without presenting difficulties for the pattern shop or foundry. The load sustained by the axle is transmitted to the rail through spokes and rim, and the design shown in Fig. 2 provides for a much more useful distribution of the metal than that in the rim, Fig. 1. It is, moreover, the type which is being adopted on at least



the patternmaker's task, and that a survey of the subject, with a comparison of a proposed wheel and its possible variations will convince most of those interested as to the need for improvement.

Every wheel centre comprises not less than three principal elements, namely (a) the axle boss, (b) the rim, and (c) the spokes. In driving and coupled wheel centres, the first of these elements is extended to take the crank-pin, and it is therefore proposed to include this part under (a) in the following examination.

A very fair example of a modern coupled wheel centre is shown in section in Fig. 1, and an inspection of the bosses for the axle and crank-pin will show that while the minimum diameters are naturally at the outer ends of the bores, the major diameter lies practically at the centre of the wheel section. This, without doubt, is of considerable assistance in the foundry, and for this reason the prevailing practice in most locomotive drawing offices has been to design the wheel about a vertical centre line, as, for example, XX in Fig. 1, regarding this as the joint line for the mould.

On the other hand, considerations of strength suggest that for the crank-pin boss the major diameter should occur appreciably nearer the outer face of the wheel as shown in fig. 2. Sound reasons for this change are:—

(a) To resist more effectively the bursting pressure which is developed at an early stage during the forcing-in of the crank-pin.

(b) To provide the utmost strength at the most vital spot when the load—which changes position throughout every revolution of the wheel—is applied to the overhung crank-pin.

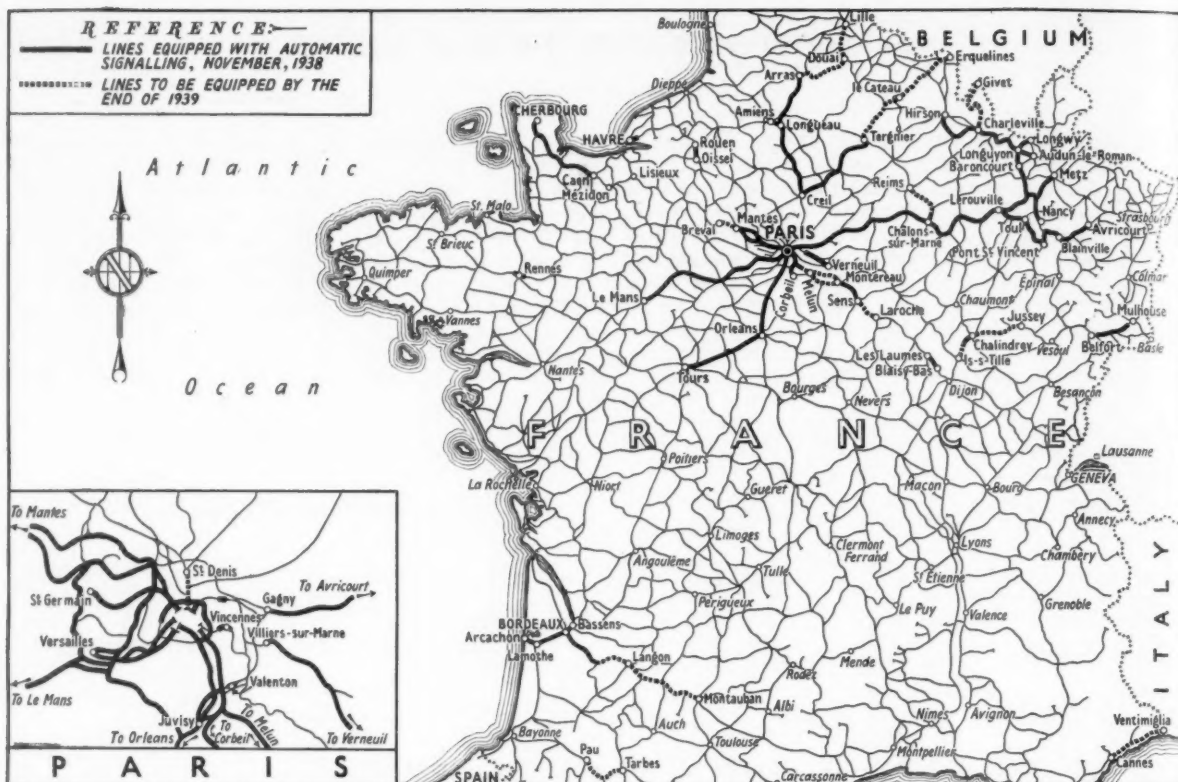
Likewise the axle boss should preferably have its major diameter nearer the inner face of the wheel by a like amount, if it is to render the fullest measure of support at the most useful point during the forcing-on process, and

one of the British main-line railways for all locomotive wheels as giving a superior landing for the spokes.

So far as the spoke sections are concerned, these would still be of a more or less oval or elliptical shape to harmonise with rim and boss designs. In some cases a cruciform section has been tried, and in others an "H" section, but neither of these is really suitable, particularly where steel is used. A rectangular section with the long sides slightly curved is another form occasionally adopted, but here also the metal is not used so effectively as in the oval or elliptical spoke, and the latter is deservedly regarded with the greatest favour.

The various elements of wheel design proposed may be regarded as the ideals, possibly hard to achieve in any one centre owing to pattern shop or foundry difficulties. In actual fact, neither department finds any difficulty worthy of mention, and the design now advocated and shown in Figs. 2 and 3 for coupled and bogie wheels respectively, was standardised nearly ten years ago by a well-known locomotive builder, and has since been used on numerous engines built by the firm for railways in different parts of the world.

TUBE STOCK FOR NORTHERN CITY LINE.—The Northern City tube line of London Transport from Moorgate to Finsbury Park, will be shut from 3.0 p.m. on Saturday, May 13, until the following Monday morning. During this time all the rolling stock will be withdrawn, Bakerloo tube stock will be substituted, and important alterations will be completed to the track and signalling system. During the week-end a special service of buses will be provided calling at all stations and accepting railway tickets. The change-over is connected with the electrification of the L.N.E.R. line from Finsbury Park to Alexandra Palace, Barnet, and Edgware.



Route or Section	Track-miles			
	In service	Under construction or proposed		
Eastern Region				
Paris-Strasbourg (Paris to Avricourt) ..	602.73	—	Paris to Tours ..	388.36
Paris-Mulhouse (Villiers to Verneuil) ..	56.54	44.74	Bordeaux to Lamothe ..	52.20
Paris-Charleville (at Reims) ..	3.12	—	Bordeaux to Langon ..	52.20
Charleville to Longuyon ..	119.92	—	Lamothe to Arcachon ..	19.90
Nancy to Longuyon ..	143.53	—	Pau to Tarbes ..	—
Longuyon to Audun-le-Roman ..	29.20	—	Langon to Montauban ..	—
Longuyon to Longwy ..	19.88	—	Total track-miles ..	512.66
Charleville to Hirson ..	73.32	—		352.94
Châlons to Reims ..	5.28	47.22	South-Eastern Region	
Chalindrey to Is-sur-Tille ..	14.91	34.17	Paris to Combs-la-Ville and Corbeil (all tracks, including goods and carriage roads) ..	115.58
Vincennes ..	2.49	—	Montereau to Sens ..	82.02
Charleville to Givet ..	—	78.29	Les Laumes to Blaisy Bas ..	78.30
Lerouville to Metz ..	98.80	—	Combs-la-Ville to Melun ..	—
Toul to Blainville (via Pont-St-Vincent) ..	57.79	—	Melun to Montereau via Moret and Héricy ..	90.10
Baroncourt to Audun-le-Roman ..	3.42	—	Sens to Laroche ..	106.88
Belfort-Mulhouse (Montreux to Brunstatt) ..	37.28	—	Cannes to Ventimiglia ..	84.51
Total track-miles ..	1,268.21	204.42	Total track-miles ..	275.90
				329.96
Western Region				
Paris Suburban Lines				
Paris (St. Lazare) to Versailles (R.D.) ..	29.20	—	Northern Region	
Paris (St. Lazare) to St. Germain-en-Laye ..	24.86	—	Creil to Longueau ..	94.45
Paris (Invalides) to Versailles (R.G.) ..	22.37	—	Longueau to Arras ..	80.78
Paris to Mantes via Poissy ..	70.84	—	Creil to Tergnier ..	105.63
Paris to Mantes via Argenteuil ..	87.00	—	Longueau to Amiens ..	6.21
St. Cloud to Garches ..	1.24	—	Courcelles (Ceinture) to La Rapée-Bercy ..	16.77
Pont Cardinet to Auteuil ..	6.21	—	Valenton to Juvisy Yard ..	12.43
Grande Ceinture ..	65.24	—	Tergnier to Le Cateau ..	—
Colombes to Courbevoie, Spur line ..	3.11	—	Paris to St. Denis ..	18.64
Main Lines				
Paris to Le Mans ..	331.81	—	Le Cateau to Quévry via Erquelines ..	68.35
Caen to Cherbourg ..	169.01	—	Amiens to St. Roch ..	3.73
Le Havre via Rouen and Oissel to Eauplet, with Lisieux and Mézidon stations ..	43.50	—	Arras to Lille ..	71.46
Mantes to Breval and Rennes station ..	—	16.16	Total track-miles ..	316.27
Total track-miles ..	854.39	16.16		108.74
			Grand total track-miles, all divisions ..	3,227.43
				1,012.22

Map of French lines with automatic signalling, and tables showing distances equipped or in hand in the five regions of the S.N.C.F. (see article opposite)

AUTOMATIC SIGNALLING IN FRANCE

The French railways have made more progress in the adoption of automatic signalling than any others in Europe

IN THE RAILWAY GAZETTE for March 4 and April 22, 1938, articles appeared describing recent automatic colour-light signal installations on French main-line railways, giving details of some of the important special features found in the most modern equipment on these lines. The French railways have made more progress with the adoption of automatic signalling than any others in Europe, and by the kindness of M. Le Besnerais, General Manager, French National Railways Company, we are able to give the table of track-mileages, reproduced opposite, showing the position as at the beginning of November, 1938. The figures form a striking tribute to the enterprise shown by the pre-grouping administrations, especially of the Est system, which had equipped very long sections of line before the fusion took place. Almost all of this automatic signalling has been installed since the war, only the former P.L.M. and Paris—Orleans lines having any length of line so fitted prior to it. So, too, light signals are used almost exclusively, and will be so used eventually, although a certain amount of automatic signalling using the semaphore and disc type signals, or the enclosed so-called "P.D." signal (Midi line), is still in service. The different systems were indicated on the map of the Est automatic signalling, appearing on page 800 of our issue for April 22, 1938.

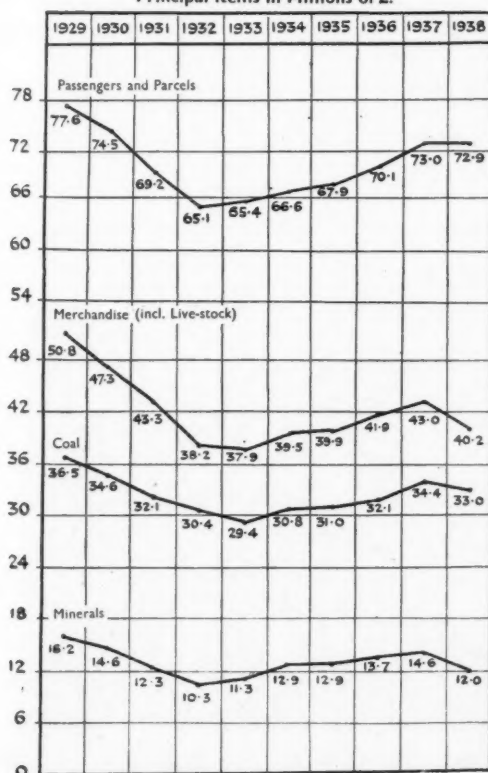
The accompanying map shows the location of all existing sections and those to be completed during 1939, comprising in all the remarkable track-mileage of 4,240, in-

volving, of course, continuous track circuiting. All these main routes were previously worked on the block system, but in some cases, as on the old Ouest lines, with rather primitive equipment. On others a good lock-and-block (P.L.M.), or the electro-semaphore block (Nord, Est, Orleans) was in use. On the electrified routes, such as the Orleans main line and Paris suburban lines, a.c. equipment is, of course, used and it is also to be found on some steam-worked lines. A very general use is made of electric detonating warning machines, sounding a report if a "stop" indication is over-run, and of cab-signal mechanism working with the "caution" indications. On the Caen—Cherbourg line continuous cab-signalling is met with. Throughout the light signalling sections, the signal aspects have been brought into conformity with the latest decisions covering lights to be exhibited and the procedure to be followed when automatic signals have failed.

On the Le Mans line automatic signals can be turned into absolute stop signals to prevent a train running forward into a section where the contact wire has been made dead. Where stations occur, simple electric control frames, frequently with key locking for points, have been provided under the charge of the stationmaster, unless the layout is large and important enough to justify the retention or installation of a regular signal box. At some large stations, of course, power installations have been put in and are generally of the route-lever type. There are also some important marshalling yard installations.

RAILWAY TRAFFIC RECEIPTS 1929-38.

Principal items in Millions of £.

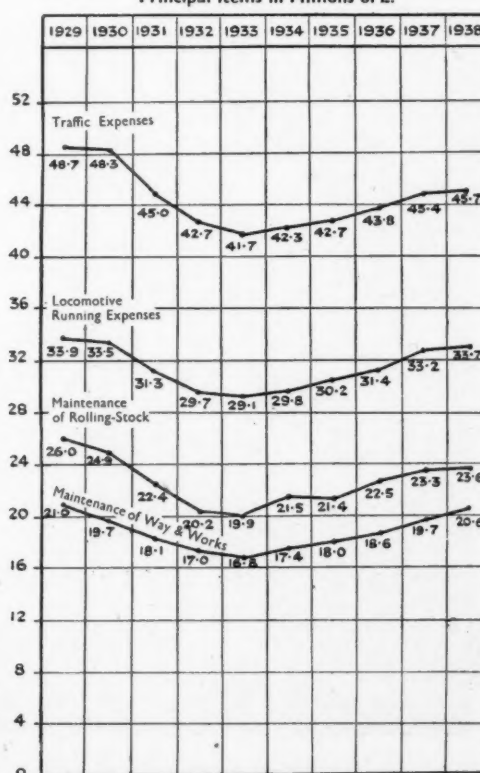


Trend of British Rail- way Receipts and Expendi- ture

Two graphs re-
produced from
the 1939 edition
of "Facts about
British Rail-
ways"

RAILWAY EXPENDITURE 1929-38.

Principal items in Millions of £.



MODERN SHUNTING LOCOMOTIVES IN AMERICA

Examples of four ten-coupled designs, three of which have booster-fitted tenders

LOCOMOTIVES designed and built for shunting service in America differ in most respects from those used in this country, or, indeed, on any of the railways of Europe. This is accounted for by the fact that the conditions to be met are also dissimilar, the extent of the yards and the loads to be handled both being on a much larger scale than in most other countries. The majority of shunting locomotives in the United States are fitted with tenders, whereas tank engines of varying capacities are mainly in use elsewhere for such duties, because in the prevailing circumstances they are better adapted for working in shunting yards by their shorter overall length, adaptability for running in either direction with equal facility, and more restricted overall wheelbase.

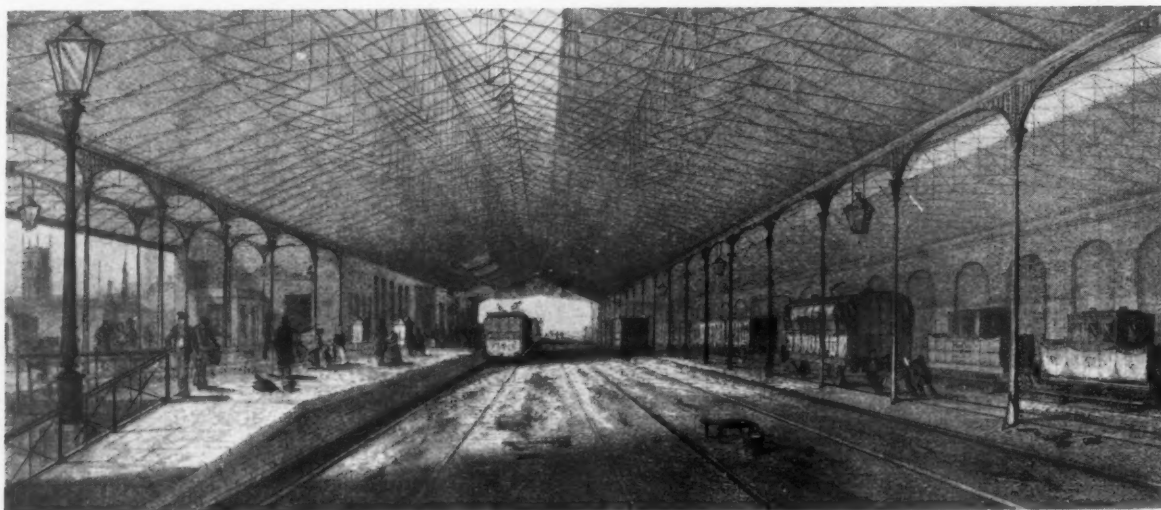
Shunting engines in America, on the other hand, are of large size and great power, and are very often equipped with boosters, applied, as a rule, to the tenders. They are, in effect, equal to main-line freight locomotives, and in general have the ten-coupled wheel arrangement with

or without additional carrying wheels, these usually being omitted at the front end if not altogether. Of the four examples illustrated the first three are all ten-coupled types built by the Baldwin Locomotive Company, and have a booster engine acting on the leading bogie of the tender, the wheels of which are coupled in the ordinary way by side rods. The fourth engine was built by the American Locomotive Company for the Chesapeake & Ohio. The locomotives are capable of dealing with big loads under the conditions imposed by shunting service, which calls for a very high starting effort and oftentimes the development of maximum power output at low speeds. They are in all cases fitted with outside cylinders with piston valve steamchests above them, the valves actuated by Walschaerts gear. The boilers are of very large proportions and the equipment of the locomotives is generally similar to that of modern American locomotives used in main-line service. The following are the leading particulars of the four types:—

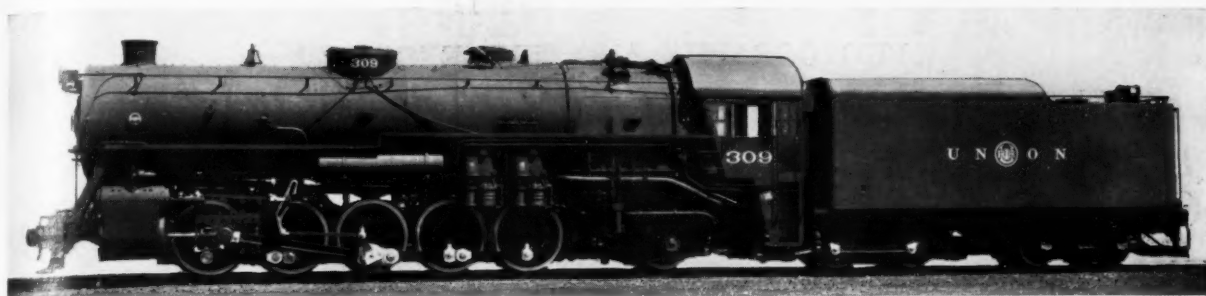
	Union R.R.	Alton & S.	Duluth, M. & N.	Chesapeake & Ohio
Cylinders, dia.	28 in.	28 in.	28 in.	27 in.
stroke	32 in.	30 in.	30 in.	28 in.
Piston valves, dia.	12 in.	14 in.	14 in.	—
Coupled wheels, dia.	5 ft. 1 in.	4 ft. 9 in.	4 ft. 9 in.	4 ft. 3 in.
Evaporative heating surface—				
Tubes	4,360 sq. ft.	3,684 sq. ft.	3,829 sq. ft.	3,491 sq. ft.
Firebox	249 "	236 "	236 "	207 "
Total	4,808*	4,009†	4,173	3,698 "
Superheating surface	1,389 "	1,116 "	1,170 "	935 "
Combined total	6,197 "	5,125 "	5,343 "	4,633 "
Firegrate area	85.2 "	80 "	80 "	72.3 "
Boiler pressure, per sq. in.	260 lb.	230 lb.	245 lb.	185 lb.
Tractive effort (at 85 per cent. boiler pressure)	90,900 lb.†	80,500 lb.§	77,600 lb.	63,000 lb.
Adhesion weight	153 tons	143½ tons	157½ tons	—
Weight of engine, in working order	180½ tons	143½ tons	157½ tons	131½ tons
Water capacity of tender	12,000 U.S. gal.	12,000 U.S. gal.	10,000 U.S. gal.	10,000 U.S. gal.
Coal capacity of tender	14 tons	18 tons	14 tons	15 tons
Weight of tender, full	106½ tons	106½ tons	90½ tons	81½ tons
Total weight of engine and tender	287½ tons	250 tons	247½ tons	213½ tons

* Including combustion chamber (76.1 sq. ft.) and thermic syphons (124 sq. ft.).
 firebrick tubes (14 sq. ft.) and thermic syphons (75 sq. ft.). § Booster adds 15,800 lb.
 thermic syphons (80 sq. ft.). ¶ Booster adds 14,500 lb.

† Booster adds 17,150 lb. ‡ Including
 || Including firebrick tubes (28 sq. ft.) and



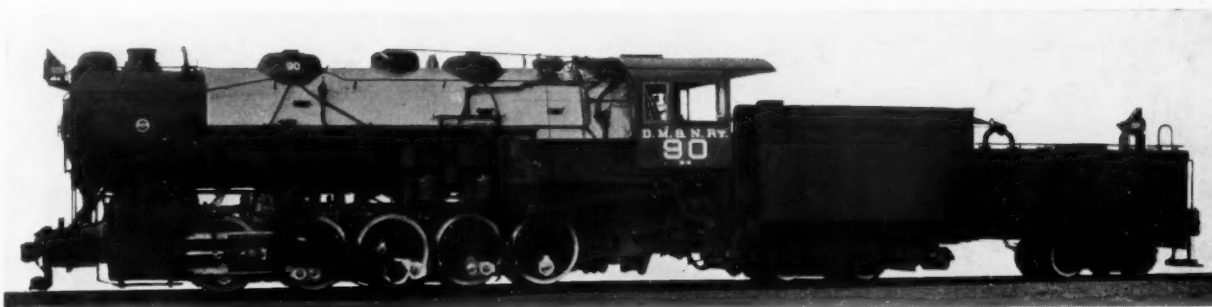
Interior of Victoria station, Hunts Bank, Manchester, in 1841, Manchester & Leeds Railway



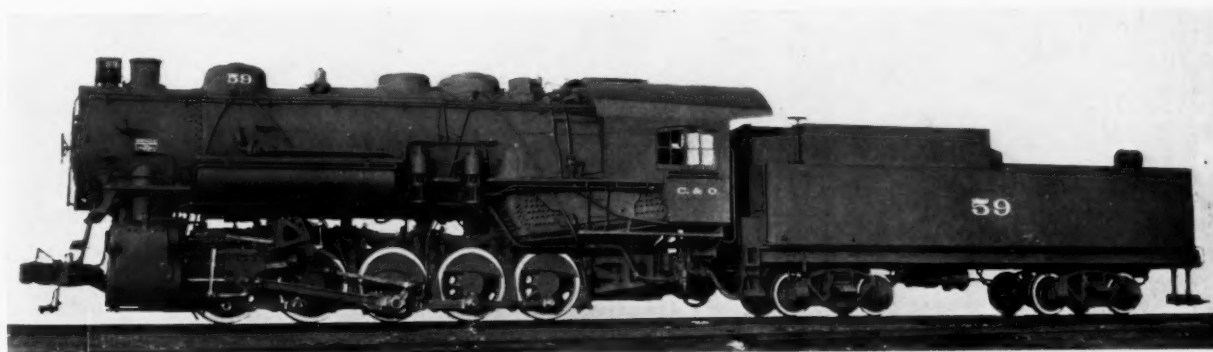
0-10-2 locomotive with booster, Union Railroad



0-10-0 locomotive with booster, Alton & Southern Railroad



0-10-0 locomotive with booster, Duluth, Missabe & Northern Railway



0-10-0 locomotive, Chesapeake & Ohio Railroad

FOUR TYPICAL MODERN AMERICAN SHUNTING LOCOMOTIVES

PHOTOGRAPHY AND THE ENGINEER

The centenary of practical photography is being celebrated during the present year

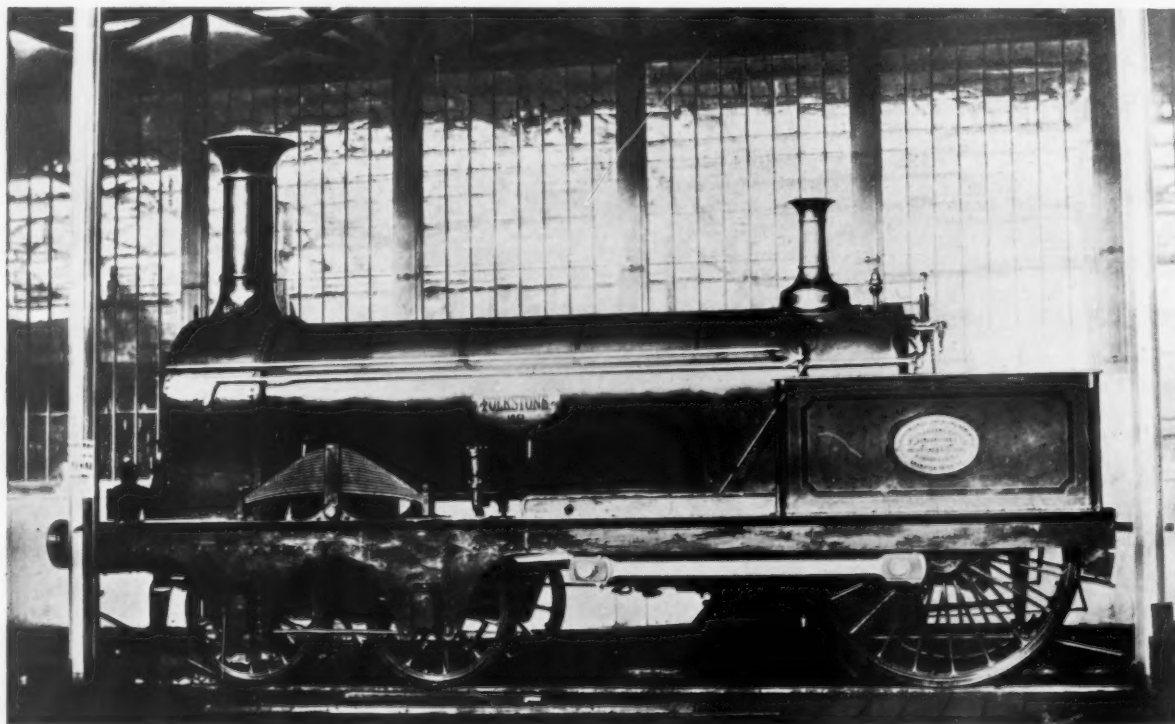
By O. J. MORRIS

ONE hundred years will have spent themselves on June 7 since the announcement was made to an incredulous world that Louis Jacques Mandé Daguerre, noted scenic artist and inventor of the diorama, had laid aside brush and palette, and was using light itself to create his pictures. Admittedly, there were other workers in the same field, notably William Henry Fox Talbot, the Wiltshire squire with a flair for chemistry and art who concurrently evolved a practicable process, but what more closely interests us is the fact that the discovery of photography was an event of the greatest consequence to the engineer. It placed in his hands the power of recording, in fractional time and with surpassing truth, details and minutiae which would otherwise have occupied his best draughtsmen for months on end. True, the draughtsman of those days was a giant in his calling, and we may regret the passing of craftsmen like Maxton, who worked on the drawings of the steamship *Great Eastern*, Kirkaldy, whose mechanical sections for the Cunard Steam Ship Company won him a place on the walls of the Royal Academy, and Lemaitre and Dulos, Chaumont and Guiget, whose magnificent engravings of everything pertaining to the mechanics of the iron road were the jealously guarded records of the railways in France.

Yet, though photography has displaced such consummate skill, and has perhaps extinguished it altogether,

the change has vastly benefited the science of engineering as a whole. No draughtsman can peer into the innermost structure of a casting, but this the X-ray camera can readily do; no draughtsman can analyse the movement of a rotating or a reciprocating part, but the slow-motion cine-camera can do this and more—it can dissect the flight of a bullet, from discharge to impact. All this is the power of photography alone, but it has another and a supreme responsibility in modern engineering—to duplicate, with guaranteed authenticity, its most vital documents.

This responsibility is discharged by means of the blueprint and its kind, which work in salts of iron where the other photographic processes deal with nothing less than the precious metals. The engineering world will honour the centenary of photography primarily in the name of this poor relation of the photographic art, and in so doing will pay tribute to Sir John Herschel, a pioneer who has written his name in large letters on English scientific discovery. There may be some argument as to whether France or England can rightly claim the discovery of photography in general, but there can be none as to which of them produced the simplest and most efficient means of diagrammatic duplication for the engineer. Before Herschel's invention of the blueprint in the early 'forties, the engineer was dependent upon his tracers, pupils usually, who made errors faster than they could make



Untouched reproduction of a Calotype taken in the Great Exhibition buildings in Hyde Park, 1851, showing the Crampton locomotive "Folkstone" of the South Eastern Railway

(Reproduced by courtesy of the Victoria & Albert Museum)



Group observing the "Great Eastern" steamship off Millwall in 1858. The front row shows (left to right) Scott-Russell, Henry Wakefield, Isambard Kingdom Brunel, and Lord Derby

duplicates, and created a degree of chaos that would bring any modern workshop to a standstill.

The tribute which we thus pay to the inventor of the blueprint must not, however, detract from the larger veneration due to the fathers of photography, and especially to Daguerre, without whose work Herschel might not have been tempted to prosecute his own researches. On the contrary, we lament that Daguerre's process was not more widely used to record, for our benefit, the shape of things that were in the fast-developing railway world, and so settle various points that may now for ever remain in obscurity. Unfortunately, the Daguerreotype was hardly in line with the normal requirements of the engineer, because it offered no means of duplication. Being one single and final impression, consisting of a deposit of metallic mercury upon a highly-polished silvered copper plate, a Daguerreotype picture could be repeated only by re-photographing the original object. That may be one reason why the discoverer of photography has received scant acknowledgment as a force in the development of engineering. So far as the railway is concerned, we can only suppose that the novelty

of Daguerre's process commended it to notice at a very early date, basing our surmise upon the tradition that a Daguerreotype picture was taken of the first train at Courtrai in 1839, and buried beneath the foundation stone of the then terminus.

It has fallen to Fox Talbot, whose Calotype process used a paper negative and so offered the means of duplication, to reveal to us a landmark in the history of photography as applied to the needs of the railway engineer. We reproduce a locomotive photograph which is, we believe, the earliest to which a date can be assigned definitely. The locomotive, one of several exhibited in the Great Exhibition, Hyde Park, 1851, is the Crampton engine *Folkstone*, built for the South Eastern Railway (S.E.R. No. 136) and afterwards employed on the fast trains to Dover during the 'fifties and middle 'sixties. Designed by Thomas Russell Crampton (1816-1888), and built under his patent of 1849, this engine incorporated a dummy crankshaft driving a pair of 6-ft. wheels, the driving axle being placed behind the firebox to allow of a fairly large boiler (heating surface 1,150 sq. ft.) with a low centre of gravity.. The cylinders were 15 in.

diameter, with a stroke of 22 in. It is interesting to note the spelling of the name, a peculiarity which seems to have escaped the notice of historians of these engines.

As for the personal side of the art, Scott-Archer's wet-collodion negative process of 1851, which held the field unchallenged until the perfection of the gelatine dry-plate in 1878 and is still largely used for photo-mechanical work such as half-tone block making, reduced the exposure time practically to the instantaneous, and so made possible "action" records of contemporary celebrities. One of the finest of such early human documents shows I. K. Brunel and Scott-Russell, co-designers of the *Great Eastern* steamship, at Millwall in 1858 watching their

mighty fabric water-borne after nine months on the slips, due to a check during the broadside launching. A melancholy interest attaches to this picture because Brunel passed away in the following year through paralysis brought on by the anxiety and exposure incidental to that difficult period. This historic example of intimate photography is now the treasured possession of Brunel's granddaughter, Lady Noble (Celia Brunel Noble), whose work, "The Brunels, Father and Son," aroused widespread interest last autumn, and in availing ourselves of the privilege of reproducing it, we assign it to its authentic place in history, a section of the picture having already appeared elsewhere under erroneous dates and headings.



Cambridge-Bletchley train, L.M.S.R., running alongside the L.N.E.R. East Coast main line on leaving Sandy station (photograph by L. G. Hanson, reproduced from "On Time")



The James Watt medal, founded in connection with the Watt bicentenary celebrations, which will be presented annually to the best engineering scholar of the Watt Memorial School, Greenock

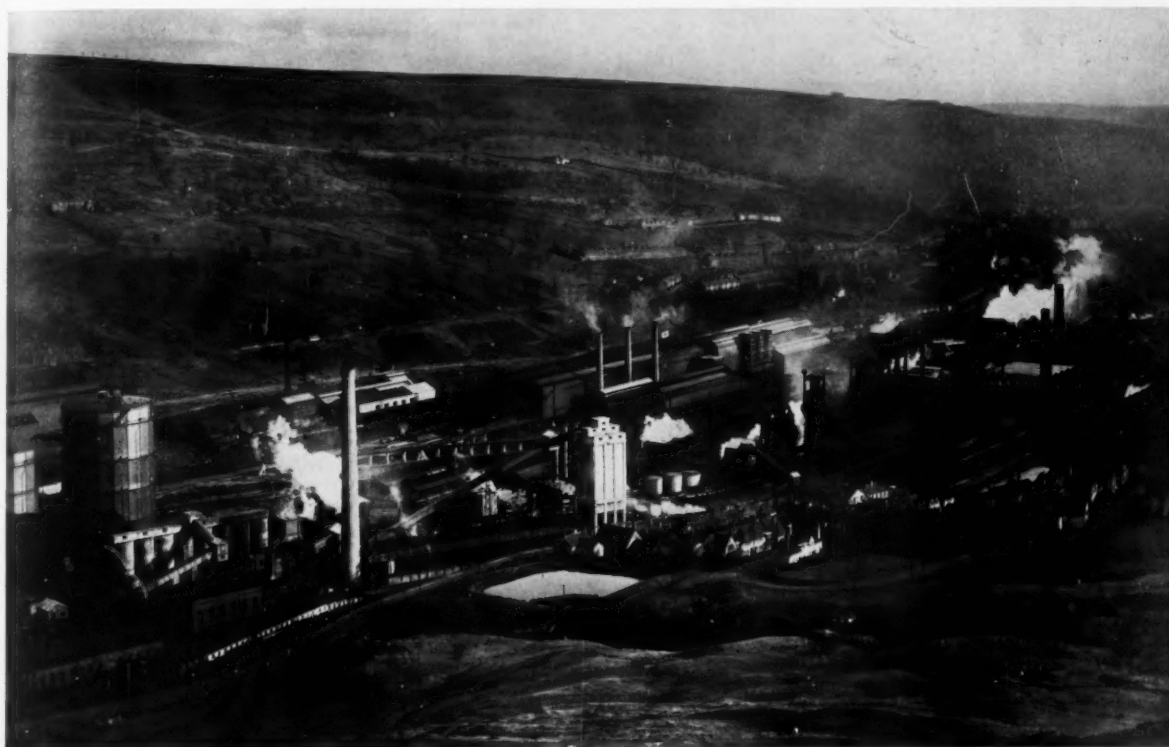
THE NEW EBBW VALE STEEL SHEET WORKS

About 70 per cent. of the total output of half a million tons a year is at present being achieved

THE new continuous strip steelworks of Richard Thomas & Co. Ltd. at Ebbw Vale, begun in 1935, are now working at about 70 per cent. of their capacity of half a million tons a year. The plant occupies the site of the old works of the Ebbw Vale Company which were closed in 1929 and which, except for

as required to pass first through a two-high blooming mill, then a slab mill consisting of a scale-breaking stand (with high-power water sprays), 4 two-high stands, and finally 5 four-high stands.

The finishing side consists of a series of five stands which reduce the plate to its finished thickness in a



General view of the new Ebbw Vale works of Richard Thomas & Co. Ltd.

the power house, boiler house, and small gasworks, have almost all been demolished and replaced. They cover an area $2\frac{1}{2}$ miles long by $\frac{3}{4}$ mile wide with entirely modern plant, the result of the accumulated experience of engineers who have laid down similar plants in other parts of the world.

The works layout takes the form of a loop, so that control of the receipt and despatch of all raw materials is centred at one point, an obvious advantage in dealing with the vast quantities concerned. Most of the ore is obtained from the company's mines at Irthlingborough, but a proportion is imported through Newport. The company's own quarries, a few miles up the valley from the works, supply all the necessary limestone, and coal is obtained from the company's neighbouring pits.

Ingots of steel up to 10 tons are produced by both the basic-Bessemer and the open-hearth processes out of metal from the blast furnaces, of which there are two, each capable of producing 3,500 tons of pig iron a week. The finished ingots are placed in soaking pits and withdrawn

continuous operation. In three minutes it is converted from a slab to a ribbon $\frac{1}{8}$ in. thick, or even less, and nearly 2,000 ft. long, in which state it emerges at a speed of 20 m.p.h. and is coiled ready for cutting for sale in the hot-finished condition or passing forward to various finishing processes, including cold rolling, annealing, pickling, and tinning.

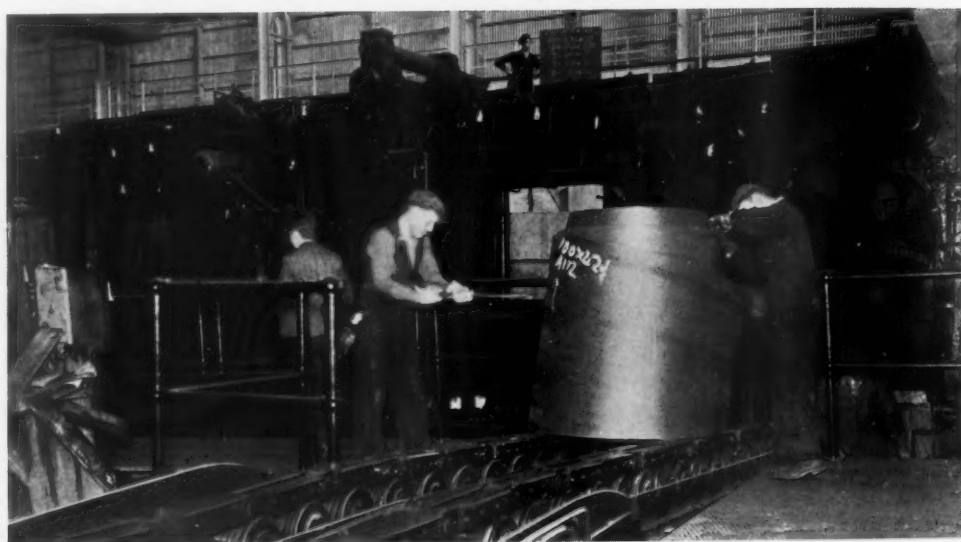
Area of Buildings

Some idea of the size of the works can be gathered from the dimensions of the principal buildings. The melting shop is 1,040 ft. long by 200 ft. wide, and the hot-strip mill 1,860 ft. by 235 ft., and the cold-mill building 2,080 ft. by 515 ft. The works are served by a battery of coke ovens capable of producing 6,300 tons of blast furnace coke a week, and providing the coke-oven gas which is mixed with blast-furnace gas for firing the various furnaces. The coke ovens have a complete by-products plant attached. The ore stockyard has a capacity of 175,000 tons.

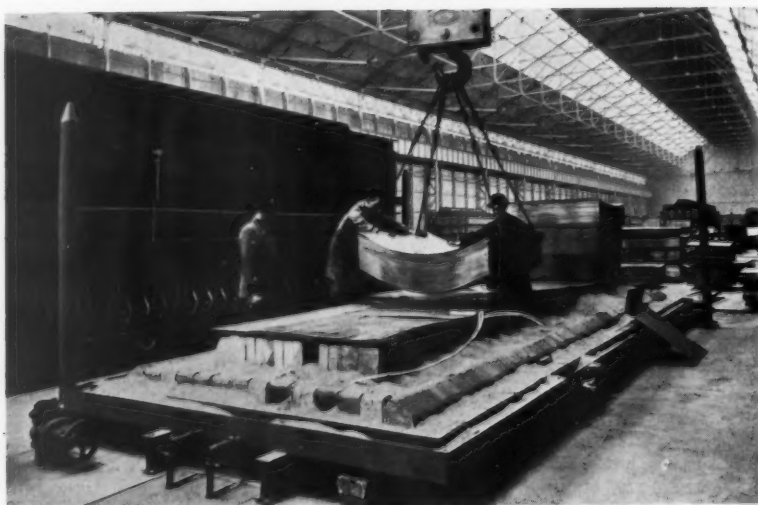
Including the 10-mile railway to the Trevil limestone



Left: The five-stand finishing mill from which the hot strip steel emerges in 2,000 ft. lengths at 30 m.p.h.



Right: Gauging a coil of $\frac{1}{16}$ -in. steel strip just coiled from the hot mill

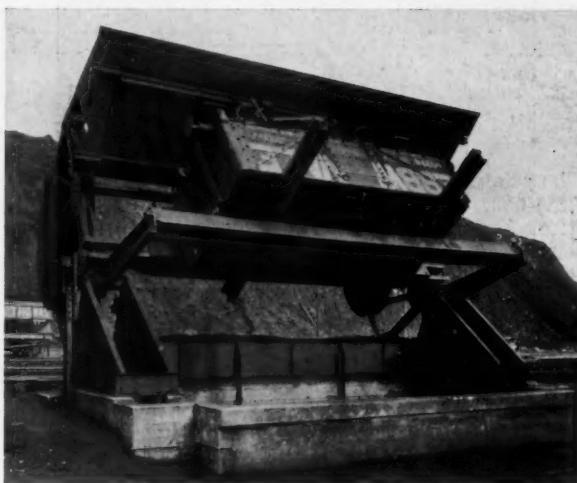


Left: Tin-plate being stacked in annealing oven

THE NEW EBBW VALE STEEL SHEET WORKS

quarry, there are altogether $57\frac{1}{2}$ miles of track in the works. The motive power consists of 32 steam tank locomotives and one diesel locomotive. On the quarry line the gradients are as severe as 1 in 35, and the loads have to be limited to 14 hoppers and a brake van. As each blast furnace uses 200 tons of limestone daily, and each limestone kiln 150 tons, a total of 730 tons of limestone has to be carried daily, in addition to limestone chippings, which are sold. The round trip from quarry to works and back takes about 3 hours and four loads are worked up and down daily.

Four trains of 31 hopper wagons each, loaded with iron ore from Irthlingborough, near Northampton, are worked daily to Ebbw Vale via Rugby, Leamington, and Gloucester, or via Roade, Bletchley, Yarnton, and Gloucester. The approximate weight per train is 600 tons, the average load of each hopper being 19 tons. The empties are collected at Rogerstone and worked back in two or more trains, as may be necessary, by similar routes.



Above: Wagon-tipper unloading coal into storage bins



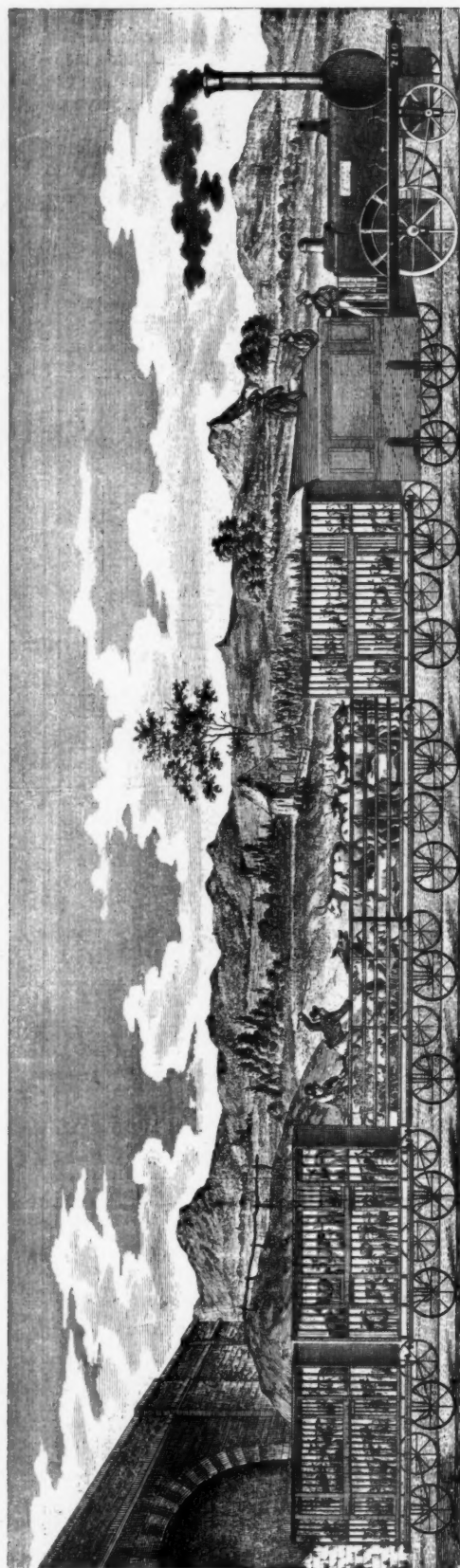
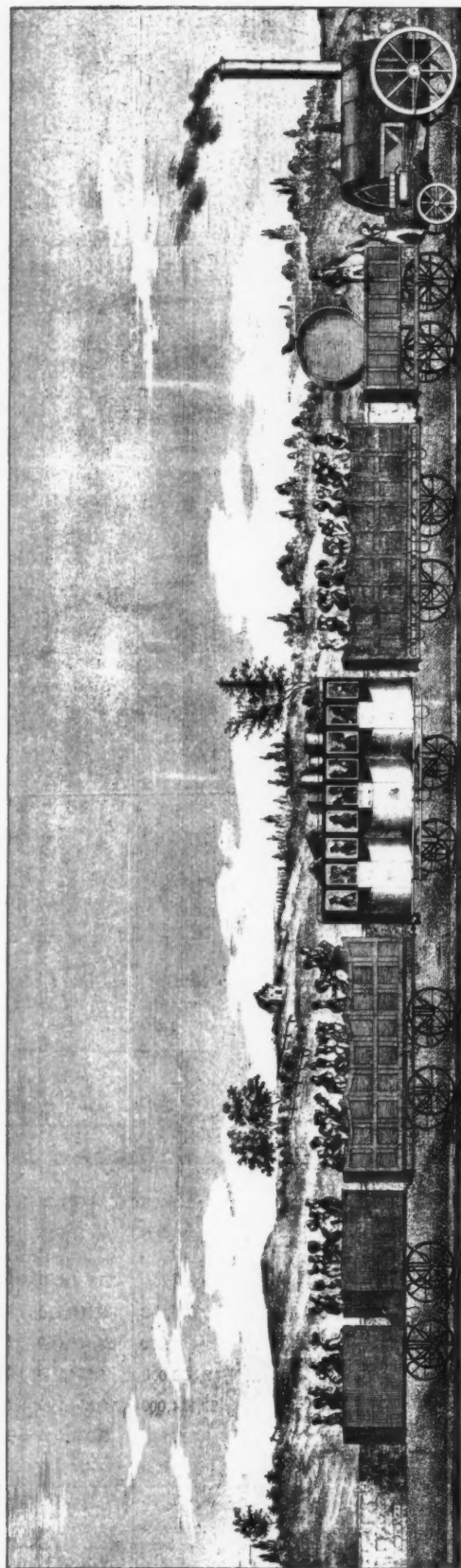
Left: One of the 32 steam tank locomotives shunting in the Ebbw Vale Works

Baltimore & Ohio Railroad Finance

The following statement shows the progress up to the close of business on April 18 of the plan by the Baltimore & Ohio Railroad Company for modification of interest charges and maturities, to which reference was made in our issue of March 10 last, at page 398. In spite of all efforts to reduce expenses, the company was not quite able to earn its fixed charges during 1937, and it was to avoid the possibility of a receivership and reorganization that the modification plan was put forward last year. Before 1937 the company had for nearly 40 years paid its fixed charges, and during most of that time had also paid dividends upon its preferred and common stocks.

		Total holdings affected by the plan	Deposits and assents received by April 18, 1939	
			Amount	Per cent. of total
Baltimore & Ohio RR. Co. ...	First mortgage 5 per cent. bonds ...	\$ 75,000,000	\$ 69,352,500	92.47
Baltimore & Ohio RR. Co. ...	Refunding and general mortgage bonds (total) ...	158,120,750	124,908,750	79.00
Baltimore & Ohio RR. Co. ...	Southwestern Division 5 per cent. bonds ...	45,000,000	39,402,500	87.56
Baltimore & Ohio RR. Co. ...	Pittsburgh, Lake Erie & West Va. 4 per cent. bonds ...	43,182,000	39,651,000	91.82
Baltimore & Ohio RR. Co. ...	Thirty-year convertible $4\frac{1}{2}$ per cent. bonds ...	63,031,000	38,560,000	61.18
Baltimore & Ohio RR. Co. ...	Five-year $4\frac{1}{2}$ per cent. secured notes ...	50,000,000	43,461,000	86.92
Buffalo & Susquehanna RR. Corporation	First mortgage 4 per cent. bonds ...	2,568,000	1,834,200	71.43
Buffalo, Rochester & Pittsburgh Railway Co. ...	Consolidated mortgage $4\frac{1}{2}$ per cent. bonds ...	29,114,000	23,854,000	81.93
Cincinnati, Indianapolis & Western RR. Co. ...	First mortgage 5 per cent. bonds ...	3,675,000	2,887,500	78.57
Lincoln Park & Charlotte RR. Co. ...	First mortgage 5 per cent. bonds ...	350,000	218,000	62.29
	Totals ...	\$470,040,750	\$384,129,450	81.72
Baltimore & Ohio RR. Co. ...	Reconstruction Finance Corporation loans ...	72,771,578	72,771,578	100.00
	Grand totals ...	\$542,812,328	\$456,901,028	84.17 securities

Hungarian Versions of the Liverpool & Manchester Railway Ackermann Long Prints



Through the courtesy of Mr. R. E. Waterfield (of Messrs. David Low, secondhand booksellers) we have recently had the opportunity of examining the black-and-white folding plates from which the above are reproduced. They were published in 1834 (the top one on August 23, and the bottom on September 6) in a Hungarian publication entitled "Fillérár" issued in Pressburg, as illustrations to a two-part article on railways (Vasúttak). These pictures are obviously based on the famous Ackermann long prints, although the trains are running in the opposite direction from the originals. The top one owes most of its details to that called "A train of the second class," but has a first class carriage inserted. The bottom picture is part of "A train of carriages with cattle"

RAILWAY NEWS SECTION

PERSONAL

L.M.S.R. APPOINTMENTS

The following appointments have been approved by the directors:—

Mr. A. J. Pearson, Assistant to Vice-President (Finance & Service Departments), Euston, to be Assistant to Vice-President (Finance & Service Departments), Euston, *vice* Mr. T. Clifton, retired.

Mr. R. M. Wells, Detailed Analysis Committee, London District, to be Goods Agent, Ancoats.

Mr. W. H. Telfer, Head Office Inspector (Accident & Accommodation), Office of Divisional Superintendent of Operation, Derby, to be Assistant Divisional Controller (Freight Services), Office of Divisional Superintendent of Operation, Derby.

Mr. F. Egerton, Assistant District Controller, Stoke-on-Trent, to be District Controller, Stafford.

Mr. F. Acton, Assistant District Controller, Saltley, to be Assistant District Controller, Stoke-on-Trent.

Mr. F. J. Hibbert, Head Office Inspector (Freight Services), Office of Divisional Superintendent of Operation, Derby, to be Assistant District Controller, Kentish Town.

Mr. R. North, Assistant District Controller, Kirkby-in-Ashfield, to be Assistant District Controller, Saltley.

The Rt. Hon. Viscount Ridley has been appointed Deputy Lieutenant of the County of Northumberland. Viscount Ridley succeeded the Hon. Walter Runciman as a Director of the L.N.E.R. at the beginning of this year.

From *The London Gazette* of April 14: Territorial Army, Royal Engineers, Engineer & Railway Staff Corps: Captain John Douglas Ritchie, M.C., late Royal Tank Corps, to be Lt.-Colonel (April 15).

Sir Clement. Hindley has been elected President of the Institution of Civil Engineers for 1939-40, and will take up his duties on November 7.

Mr. W. J. U. Woolcock, C.M.G., C.B.E., a Vice-President of the Federation of British Industries, has accepted the position of Chairman of the Overseas Industrial Publicity Committee, recently appointed by the federation to assist in the promotion of news of British industrial enterprise in the world's press.

Mr. M. M. Loubser, B.A.(Hon.), Dipl. Ing., V.D.I., M.I.Loco.E., who has been appointed Chief Mechanical Engineer of the South African Railways & Harbours, is descended from one of the French Huguenots who came to the Cape in 1688. He was educated at Stellenbosch and graduated with honours from the Victoria College in 1909. He then proceeded to Germany, where he served a year as



Mr. M. M. Loubser

Appointed Chief Mechanical Engineer, South African Railways & Harbours

premium apprentice and attended the Technical University at Berlin-Charlottenburg. At the outbreak of hostilities he was made a civil prisoner, but, in common with other South African students, was afterwards permitted to continue his studies and took his Dipl. Ingenieur in Railway Mechanical Engineering in 1915. He then served as a draughtsman with various firms of repute until he returned to South Africa in 1919. There he served on the staff of the three leading universities for some time until he joined the South African Railways in 1925 as Test Engineer. Subsequently he held various positions both in the Mechanical and Transportation Departments until he became Assistant Chief Mechanical Engineer in 1936. Mr. Loubser is Vice-President of the S.A.R. & H. En-

gineering Society. He was recently awarded, jointly with Mr. E. S. Cox, the Gold Medal of the Institute of Locomotive Engineers for a paper entitled "Locomotive Boiler Design—Theory and Practice."

Mr. A. G. Blake, officiating Deputy General Manager of the Assam Bengal Railway, retired from that post in March. Alfred George Blake entered the company's service as a carriage fitter in the mechanical workshops in 1898, at the age of 16. He was soon after transferred to the Locomotive Running Department as a fireman. He was promoted to driver in 1902, and by successive appointments became running shed foreman, assistant locomotive superintendent, district locomotive superintendent, personal assistant to locomotive and carriage superintendent, officiating locomotive and carriage superintendent, and finally officiating deputy general manager. At the time of his appointment the railway was still in its infancy, having run its first public passenger train only four years before; the open line mileage at the end of 1898 was 375 as against 1,306 today. In his 40½ years with the system Mr. Blake served under seven agents and six locomotive superintendents. Mr. Blake is now making a tour round the world before settling down with his family at his house near Southampton. His many friends wish him health and happiness in his retirement.

Mr. John Edward Dixon has been elected President of the Lima Locomotive Works, one of the three great locomotive building firms in the United State. He succeeds Mr. Samuel G. Allen, who has been President since 1931, and Chairman since 1935; he will continue to serve as Chairman. Mr. Dixon graduated at the University of Wisconsin in 1900 with the degree of B.Sc. in mechanical engineering, and thereafter became an apprentice with the American Locomotive Company. Subsequently he was appointed successively foreman, travelling engineer, draughtsman, and general inspector. In 1905 he was appointed Assistant to the Manager and later became Manager of the Atlantic Equipment Company, but in 1907 returned to the American Locomotive Company as Salesman, and then as Assistant Manager, Sales. In 1916 Mr. Dixon became Vice-President of Sales of the reorganised Lima Locomotive Works, and in 1934 took over additionally the vice-presidency

of engineering, the position he now vacates to become President.

Mr. A. J. Pearson, who as announced on page 789 has succeeded Mr. T. Clifton (retired) as Assistant to Vice-President (Finance and Service Departments), L.M.S.R., received his general training in railway practice with the Cheshire Lines Committee from 1918-31, gaining experience in departments from station working to the Manager's staff. In 1931 he was appointed an Assistant Editor of *Modern Transport*, and remained with that journal until his appointment as Personal Assistant to Vice-President (Finance and Service



[Alex Corbett]

Mr. A. J. Pearson,

Who succeeds Mr. T. Clifton, Assistant to Vice-President (Finance & Service Departments), L.M.S.R.

Departments), L.M.S.R., in 1934. His title was altered to Assistant to Vice-President (Finance and Service Departments) in 1937. On the retirement of Mr. T. Clifton, Mr. Pearson has been promoted to the status of a junior officer of the company, his designation remaining unchanged. Mr. Pearson is a Member of the Institute of Transport, and was awarded the Canal Gold Medal of that institute in 1932. He has read several papers on transport subjects, notably one on "Economics of Railway Signalling" to the Institution of Railway Signal Engineers, and on "The Road and Rail Transport Problem" to the Kynoch Shop Management Association.

The late Mr. Thomas Barbour, Chairman of the Belfast & County Down Railway, whose death on January 28 was recorded in our issue of February 3, left personal estate in England and Northern Ireland valued at £4,623.

The late Brig.-General G. H. Harrison, who as recorded in our issue of February 24 died on February 14 this year, left estate of £28,656 (£26,442). Brig.-General Harrison was Chairman

of the G.W. of Brazil and Central Uruguay Railway Companies.

L.N.E.R. ESTATE AND RATING ORGANISATION

We are officially informed that the resignation of Mr. H. W. J. Powell, Estate and Rating Surveyor, and the altered methods of rating brought about by the Railways (Valuation for Rating) Act, 1930, have led to a change in the organisation of this branch of work. The 1930 Act has changed the principle of rating, and it has been decided to place this work, so far as it covers England and Wales, in charge of a Rating Agent who will have offices in the Southern and North Eastern Areas, at Liverpool Street and York, respectively. The Rating Agent will be under the general control and supervision of the Chief Legal Adviser who is already responsible for the rating work in Scotland.

The new post of Rating Agent (England and Wales) will be filled by Mr. H. J. Caines. Mr. Caines joined the Surveyor's Department of the former Great Northern Company in 1910. He was on active service from 1915 until 1919, when he returned to King's Cross. In 1924 he was appointed Technical Assistant, and during the following years was actively engaged in work which led up to the Railways (Valuation for Rating) Act, 1930, becoming Rates and Taxes Assistant in 1932.

Under this new organisation, Mr. G. S. Sowerby will in future be known as Estate Surveyor, North Eastern Area, while the post of Estate Surveyor, Southern Area, will be filled by Mr. C. B. Tidmarsh. Mr. Tidmarsh joined the service of the old G.N. Company in 1909 as an Assistant in the Surveyor's Department. He served with His Majesty's Forces throughout the war, and came back to King's Cross in June, 1919. Shortly after amalgamation he was appointed District Estate and Rating Agent, Manchester, and was transferred to Liverpool Street in 1927 in the capacity of Assistant to the Estate and Rating Surveyor.

Finally, Mr. A. R. A. Bates has been appointed Assistant to the Estate Surveyor, Southern Area. Like Mr. Tidmarsh and Mr. Caines, Mr. Bates is an old G.N. man. He joined the Surveyor's Office of that company in November, 1898, and has a wide and varied knowledge of the work of the department.

The late Mr. C. A. Warner, Stationmaster at Slough, G.W.R., whose death on March 26 was recorded in our March 31 issue, left estate valued at £4,726 (£4,663 net).

Mr. John Hassall has been awarded a civil list pension of £110 a year in recognition of his services to poster art. Mr. Hassall designed the famous poster "Skegness is so Bracing" issued by the Great Northern Railway.

Mr. H. Heyes, whose appointment as District Controller, Patricroft, L.M.S.R., was recorded in our April 14 issue, began his railway career as a junior telegraph messenger with the Cheshire Lines Committee at Heaton Mersey in 1901. In 1903 he was transferred to the Midland Railway when that company opened its Stockport and Marple avoiding line, and became a junior porter at Didsbury. After serving as a porter at various Manchester district stations until 1906, and as a signaller in the Manchester-Ambergate district until 1912, Mr. Heyes was in the latter year appointed Controller's Assistant at Masborough.



Mr. H. Heyes

Appointed District Controller, Patricroft, L.M.S.R.

He subsequently became Relief Controller at Westhouses (1913), Yardmaster at Westerleigh sidings, Bristol (1924), and District Signalmen's Inspector, Nottingham (1926). In July, 1929, Mr. Heyes was appointed Assistant District Controller, Cudworth; went to Kentish Town in a similar capacity in 1932; and in 1936 was appointed District Controller, Rowsley, whence he has now gone to Patricroft.

We regret to record the death on April 28 of Lt.-Colonel J. S. Ruston, Chairman of Ruston & Hornsby Limited and of Ruston-Bucyrus Limited.

We regret to record the death on April 15, in a Leeds nursing home, of Mr. Thomas Hewitt, Managing Director of the Yorkshire Lubricator Co. Ltd. From 1907 to 1922 Mr. Hewitt was in the service of Charles Roberts & Co. Ltd. at Horbury Junction, and rose to the position of Assistant Manager. He left that firm to found the Yorkshire Lubricator Co. Ltd., and under his direction the new firm gradually expanded and has now over 50 employees.



Monsal Dale viaduct, carrying the L.M.S.R. main line from Derby to Manchester, is now being strengthened



Royal train from Waterloo to Portsmouth on Saturday last, passing Walton (see paragraph on page 800)



The London Passenger Transport Board on Wednesday demonstrated to the press two units of its new coach fleet for Green Line services and private hire. The Leyland chassis has a flat engine placed amidships under the floor. For Green Line services 75 of the type, with 34-seat bodies have been ordered. The private hire vehicles, which introduce the novelty of the glass top to facilitate sightseeing, seat 33; 12 of these are being built



The Five Railway Memorial Windows at Longmoor Garrison Church



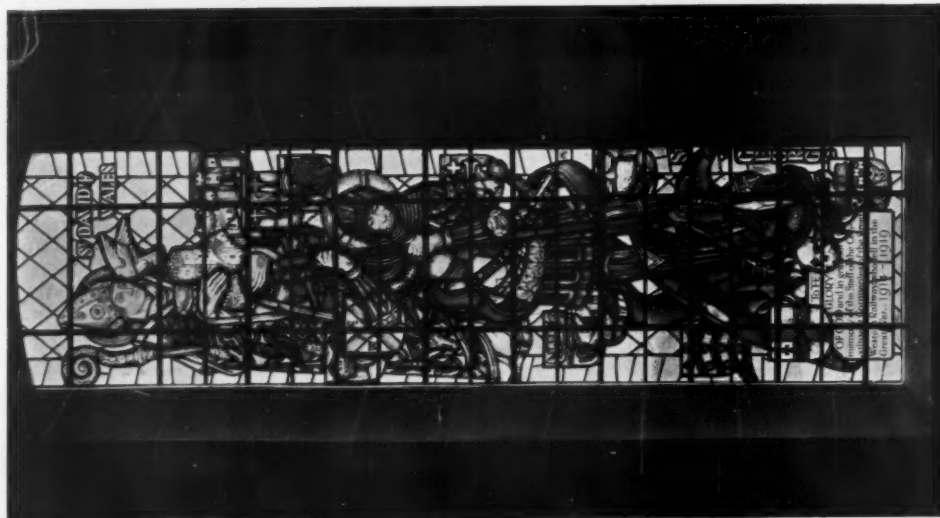
L.M.S.R. WINDOW

St. Mungo
St. Alban



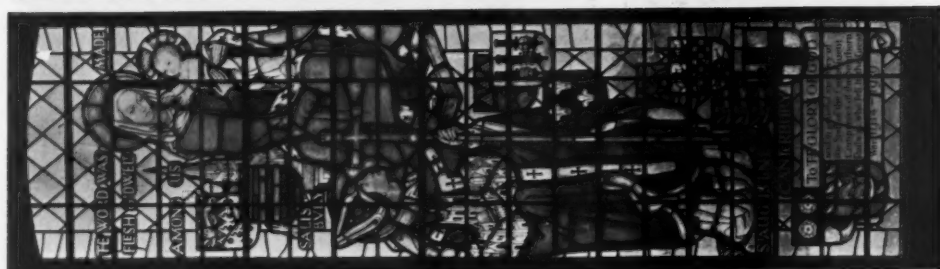
L.N.E.R. WINDOW

St. Andrew
St. Peter



G.W.R. WINDOW

St. David
St. George



S.R. WINDOW

St. Mary
St. Augustine



L.P.T.B. WINDOW

St. Paul
St. Edward

The windows, which were dedicated last Sunday, are to the design of Mr. Martin Travers, and commemorate the men of the constituent companies of the main-line railways and the London Passenger Transport Board who were killed in the great war. The centre panel is shown in its wall setting, but in the other cases the stained glass panel only is illustrated.

St. Martin's Garrison Church, Longmoor

Dedication of stained glass windows in memory
of railwaymen who fell in the great war

On Sunday afternoon last, May 7, the Rev. E. H. Thorold, C.B., C.B.E., M.A., D.D., K.H.C., Chaplain-General to the Forces, dedicated the five stained glass windows to the memory of the men of the constituent companies of the Great Western Railway, the London Midland & Scottish Railway, the London & North Eastern Railway, the Southern Railway, and the London Passenger Transport Board who fell in the Great War, 1914-1918.

Amongst those attending the Dedication Service were:—

The Rt. Hon. Lord Stamp, G.C.B., G.B.E., D.Sc., Chairman and President, London Midland & Scottish Railway, and Lady Stamp; Mr. R. Holland-Martin, C.B., Chairman, Southern Railway Company; Sir Murrough J. Wilson, K.B.E., Deputy Chairman, London & North Eastern Railway, and Lady Wilson; the Rt. Hon. Lord Portal, M.A., D.S.O., Director, Great Western Railway, and Lady Portal; Mr. J. Cliff, Member, London Passenger Transport Board, and Mrs. Cliff; Lt.-Colonel R. D. Waghorn, Commandant, Railway Training Centre, R.E., Longmoor, and Mrs. Waghorn; Colonel G. S. Szlumper, C.B.E., General Manager, Southern Railway, and Mrs. Szlumper; Sir Harold Hartley, C.B.E., F.R.S., Vice-President, London Midland & Scottish Railway, and Lady Hartley; Colonel R. Carpmal, Chief Engineer, Great Western Railway; Mr. W. A. Stanier, Chief Mechanical Engineer, London Midland & Scottish Railway; Major L. F. Dawes, M.B.E., Secretary, Southern Railway, and Mrs. Dawes; Colonel L. Manton, D.S.O., O.B.E., Principal Railway Staff College, Derby, and Mrs. Manton; Lt.-Colonel A. H. L. Mount, C.B., C.B.E., Chief Inspecting Officer of Railways, Ministry of Transport; Colonel A. H. C. Trench, C.I.E., Inspecting Officer of Railways, and Mrs. Trench; Lt.-Colonel E. Woodhouse, R.E., Inspecting Officer of Railways, and Mrs. Woodhouse; Major G. R. S. Wilson, Inspecting Officer of Railways.

Lt.-General Sir John G. Dill, K.C.B., C.M.G., D.S.O., G.O.C. in C., Aldershot Command; Major-General T. S. Riddell Webster, D.S.O., Director of Movements and Quartering, and Mrs. Riddell Webster; Major-General H. L. Pritchard, C.B., C.M.G., D.S.O., Representative Colonel Commandant, Royal Engineers; Mr. J. M. Gilliat, K.R.R.C., A.D.C. to G.O.C. in C., Aldershot Command; Brigadier C. A. Bird, D.S.O., Chief Engineer, Aldershot Command, and Mrs. Bird; Brigadier H. O. Curtis, D.S.O., M.C., O.C. Troops, Bordon and Longmoor, and Mrs. Curtis; Lt.-Colonel H. N. H. Williamson, D.S.O., M.C., R.A., O.C. Troops, Longmoor, and Mrs. Williamson.

Brig.-General Sir H. Osborne Mance, K.B.E., C.B., C.M.G., D.S.O., and Lady Mance; Major J. H. Anderson and Mrs. Anderson; Mrs. Bidulph; Major C. E. A. Browning and Mrs. Browning; Major E. C. Cookson and Mrs. Cookson; Lt.-Colonel A. B. Chester; Mr. A. C. Cookson; 2/Lt. R. L. P. Cobb; Lt.-Colonel J. V. Denning, M.C., and Mrs. Denning; Lt. G. P. Davies; Major R. H. Edwards; Major D. S. Gribble and Mrs. Gribble; 2/Lt. H. A. Hammett; 2/Lt. F. J. Ivimey; Mr. J. A. Kay and Mrs. Kay; Lt.-Colonel A. W. Ker-Gibson and Mrs. Ker-Gibson; Major C. A. Langley, M.C., and Mrs. Langley; Lt.-Colonel D. J. McMullen, D.S.O., O.B.E.; Lt.-Colonel J. A. A. Pickard, D.S.O., and Mrs. Pickard; Major J. S. Payne and Mrs. Payne; Major G. H. Pottle, M.C., and Mrs. Pottle; Major A. C. J. Payne, M.M., and Mrs. Payne; 2/Lt. P. N. Phizackerley; Lt. I. L. Roney-Dougal; Lt. J. R. H. Robertson; Colonel H. A. Short, M.C.; Major E. M. Sinauer and Mrs. Sinauer; 2/Lt. W. J. H. Stanier; Col. W. G. Tyrrell, D.S.O.; Lt. W. B. Tyrrell; Mr. Martin Travers; Capt. R. J. Walker and Mrs. Walker.

The order of the service was as follows:—

Hymn, (165, A. & M.)

"O God our help in ages past."

The following sentence was then read:—
"We are assembled to praise God, and to remember before His throne of Grace those of our brethren who gave their lives in the great war which we waged to save the world from cruelty and wrong, and to pray that we may worthily set forward His Kingdom of righteousness and peace in the world."

General Confession.

The Absolution.

The Lord's Prayer.

Psalm 122.

Lesson, Wisdom, Chapter 3, verses 1 to 9. Read by The Rev. C. D. Symons, M.C., M.A. (Assistant Chaplain-General, Aldershot Command).

Nunc Dimittis.

Hymn (468, Songs of Praise)

"City of God, how broad and far."

Each of the five memorial windows was then dedicated by the Chaplain-General.

"O God, the protector of all that trust in thee, without whom nothing is strong, nothing is holy: Increase and multiply upon us thy mercy: that, thou being our ruler and guide, we may so pass through things temporal, that we finally lose not the things eternal: Grant this, O heavenly Father, for Jesus Christ's sake our Lord. Amen."

"TO THE GLORY OF GOD AND IN GRATEFUL MEMORY OF THE MEN OF THE STAFF OF THE CONSTITUENT COMPANIES OF THE GREAT WESTERN RAILWAY, THE LONDON MIDLAND & SCOTTISH, THE LONDON & NORTH EASTERN, THE SOUTHERN, AND THE LONDON PASSENGER TRANSPORT BOARD, WE DEDICATE THIS WINDOW IN THE NAME OF THE FATHER, AND OF THE SON, AND OF THE HOLY GHOST. AMEN."

Then followed the Last Post and Reveille.

The rest of the service consisted of Hymn (293, Songs of Praise—"O valiant Hearts"), and an address by the Chaplain-General, followed by Hymn 437 (A. & M., "For all the Saints").

Blessing.

The National Anthem.

A Short History of St. Martin's Garrison Church, Longmoor

On Palm Sunday, March 29, 1931, the present building was dedicated as the Garrison Church. Up to that year, divine service was held in the Seymour Hall, Church of England Institute, a not very satisfactory arrangement as during the week it was used as a dance hall and cinema. With a view to obtaining a more suitable and at the same time permanent building for public worship, every effort was made to secure the present church, which was then a forage barn. Permission was granted to turn the barn into a church, and it was duly dedicated by the Chaplain-General to the Forces.

To start with, the church contained only the bare necessities, with a harmonium to supply the music, and the choir stalls and pulpit were in plain deal. However, in a very short time a fine two-manual organ was lent to the church by the C.E.S.S.A.I., and four oak pew fronts, choir stalls, oak pulpit and lectern were added. The addition of oak panelling on either side of the altar considerably improved the appearance of the Sanctuary.

On Sunday, April 26, 1936, a beautiful reredos was dedicated in memory of the Railway Troops, R.E., who fell in the great war. The memorial was erected as a tribute from all ranks of the R.T.C., R.E., and was designed by Mr. Martin Travers, A.R.C.A. (Arch. Lond.). The centre panel contains a life size figure of the Risen Christ with hand upraised in blessing. Around the Figure are the words "Greater Love hath no man than this, that a man lay down his life for his friends." In each corner of the side panels is carved the R.E. grenade and motto *Ubique*—a symbolic idea not only representing the Corps of Royal Engineers, but also the flaming torch of Christ spreading light throughout the world. The whole scheme is completed with a red and gold altar frontal, silvered wood candlesticks, and Cross.

Following upon the installation of the reredos further plans for the improvement of the Garrison Church were put under way, and consisted of suggestions for the structural alteration of the chancel, a new font, and new windows. After a while the scheme took form and hopes were more than realised when the Great Western Railway, the London Midland & Scottish Railway, the London & North Eastern Railway, the Southern Railway, and the London Passenger Transport Board decided each to give a stained glass window in grateful memory of the staffs of their constituent companies. The next piece of good news was the gift of a new font by the Longmoor Garrison Infant Welfare Centre, in grateful memory of Sister Anne Phillips, whose devoted work among the married quarters of this Garrison is permanently commemorated in the church by this welcome addition. The font was dedicated on December 5, 1937.

Owing to the considerable cost of the original scheme for the structural alterations to the chancel, the plan had to be modified. But the cutting away of the steel girders that went across the top of the roof and which definitely spoilt the view of the reredos, together with the erection of six steel pillars encased in oak, has made a definite improvement to the appearance of the interior of the church.

The Memorial Windows

The beautiful windows which were dedicated last Sunday are once again the work of Mr. Martin Travers.

The Great Western Railway window contains the figures of two saints, St. David and St. George, and there are the coats-of-arms of places served by the company. From the top downwards

are the coats-of-arms of Exeter, Gloucester, Cardiff, Plymouth, Oxford, Bristol, London, Swindon, Abingdon, Devonport, Shrewsbury, and Merthyr Tydfil.

The London Midland & Scottish Railway window contains the figures of St. Mungo and St. Alban. The coats-of-arms of places reading from the top downwards are: Paisley, Clyde, Glasgow, Carlisle, Rugby School, Chester, Manchester, Liverpool, Birmingham, Lancaster, Derby, and London.

The London & North Eastern Rail-

way window contains the figures of St. Andrew and St. Peter. Coats-of-arms of places reading from the top are: Edinburgh, Newcastle, Leeds, Doncaster, Hull, Colchester, Cambridge, Norwich, London, Grimsby, Sheffield and St. Andrew's University.

The Southern Railway window contains St. Mary and St. Augustine. The coats-of-arms of places reading from the top downwards are: Chichester, Salisbury, Aldershot, Woolwich, Winchester School, Chatham, Dover (Port), London, Southampton and Brighton.

The London Passenger Transport Board window contains St. Edward the Confessor and St. Paul. There are also the coats-of-arms of counties served by the board.

Anyone present at the dedication service last Sunday afternoon who remembers the building as it was in 1931, must have appreciated the great improvements made in the past eight years, thanks to the generosity and hard work of all those who have the welfare and the beauty of the Longmoor Garrison Church at heart.

Crewe Pupils and Premiums Annual Dinner

The forty-ninth annual Crewe dinner was held on May 5, at the Trocadero Restaurant, London, W.1, under the chairmanship of Mr. G. Glynn Terrell. Mr. O. V. S. Bulleid, Chief Mechanical Engineer, Southern Railway, was the guest of honour. The attendance numbered over one hundred past and present Crewe men and their guests, and included:—

Mr. Adrian C. Moreing, M.P.; Dr. Fielding-Ould; Mr. J. R. Remer, M.P.; Captain H. P. M. Beames; Messrs. J. B. Elliott, W. A. Stanier, H. G. Ivatt, D. C. Urie, the Hon. Richard Lytton, Mr. H. Leslie Boyce, M.P.; Colonel B. C. L. Jervis, D.S.O.; Lt.-Colonel C. J. Francis, the Earl of Radnor, Major David Howard, Mr. J. Deschamps, Colonel F. R. Collins, Colonel J. Sealy-Clarke, Major H. A. Harrison, Major Squarey, Messrs. L. W. Swainson, R. M. E. Ashworth, J. W. Beaumont, F. S. Bennett, F. A. Lemon, J. Thom, C. D. Lambert, Donald Fraser, and W. B. Leach.

Mr. G. Glynn Terrell proposed the toast of "The Guests" and expressed the regret of all Crewe men at the decision of the directors of the L.M.S.R. not to take on any more "premiums or pupils" at Crewe works, though he thought the engineering apprentices would no doubt carry on the Crewe tradition as they expected them to do. Mr. Terrell voiced the pleasure of the company at the presence of Mr. Bulleid, Mr. Elliott, the Earl of Radnor, Mr. Stanier, Mr. Leslie Boyce, Mr. Moreing, Mr. John Remer, and his father Mr. George Terrell, whose action in sending him to Crewe had enabled him to make many lifelong friendships.

Mr. O. V. S. Bulleid, responding, said that he was trained at Doncaster under Mr. Ivatt, a Crewe man, and there they had always a great admiration for Crewe works. He echoed the regret expressed by Mr. Terrell at the dropping of the pupil and premium system at Crewe.

Mr. Adrian C. Moreing, M.P., also responded, tracing, in a humorous speech, his interest in Crewe from the days when, as a boy, he watched the black-painted engines and white upper panelled coaches of the L.N.W.R. go by at Watford. He concluded his speech with the words of John Bright: "Railways have rendered greater service to the country and received less gratitude than any other field of human endeavour."

Mr. John Remer, M.P., also supported the toast.

Mr. H. Leslie Boyce, M.P., proposed the toast of "Past and Present Crewe Pupils and Premiums," and also spoke in lighter vein.

Captain R. E. Trevithick responded on behalf of past Crewe men, and Mr. C. H. Codling similarly replied in a well received speech on behalf of present Crewe men.

Mr. John Shearman proposed the toast of "The Chairman" in a discourse laden with humorous anecdote of the chairman's and his own apprentice days at Crewe.

Accident at Farringdon Station, L.P.T.B.

Conflicting evidence was given before Colonel A. C. Trench, Inspecting Officer of the Ministry of Transport, during his inquiry on May 5 into the collision, briefly announced in our news section last week, which occurred on May 1 at Farringdon & High Holborn station, L.P.T.B., at about 9.42 p.m. A Metropolitan Line train from Aldgate to Hammersmith collided with the engine of a Great Western goods train, crossing from the up Metropolitan to the widened lines just west of the station; 19 persons were slightly injured.

The driver of the electric train, H. W. Pither, who jumped clear of his cab at the last moment and had a remarkable escape, said the down starting signal was "off" when he entered the station and he in due course started on receiving the bell signal from the guard (the train was one of the all-metal type with air-controlled doors, the guard giving the signal direct to the driver, as on the tube trains, and not using the platform wires and "S" starting indicator light, as is customary with the older types of train on the Circle lines). Pither did not see the Great Western train while standing in the station, but saw the oil headlamp later a short distance off. He released the dead man's handle and jumped out. He was convinced the starting signal was "off" and told the signalman so. He had never been taken to task for passing a danger signal in the 15 years he had been driving.

Signalman G. L. Rich said he cleared

the signals for the Great Western goods train after the electric train had stopped in the station and was surprised later to see the latter advancing. He shouted to the driver, who came to him after the collision and asserted that the starting signal was "off," but he pointed out that the position of his levers and repeater indicators showed this to be wrong.

Driver G. V. Jones, G.W.R., said he was stopped by signal, but when it cleared he moved forward over the crossover junction line and then saw sparking from the electric train. Seeing he could not get clear he shut the regulator but left the brakes off.

Guard C. W. Ward of the electric train said he saw the signal before the train left, but did not get out of his car. He was confident his train was not tripped but found the trip arm of the train stop was up after he returned from hospital.

Power Signal Lineman G. A. Fuller said the signals were red immediately after the collision. There was some discussion regarding the duty of guards and station staff respecting the observation of starting signal indications and the relevant rules.

Porter W. H. Rubridge said he regarded it as his duty to see the signal was "off" before giving the guard the intimation that he might start his train.

Colonel Trench announced that he would visit certain stations where it was said that the guard could not see the starting signal, and the inquiry was closed.

Mr. G. Glynn Terrell replied to the toast in an able speech.

Captain Reginald Terrell, who for 25 years has been responsible for the organisation of this annual dinner, and without a speech from whom the dinner could not be regarded as complete, intimated in the course of a characteristic "few words" that he had decided that the time had now come when he must hand over the organising duties to another, and proposed, for the consideration of the Dinner Committee, that Captain E. A. Robinson should undertake those responsibilities which throughout 25 years he himself had fulfilled with very real pleasure.

London Passenger Fares

Completion of Railway Rates Tribunal Inquiry

After sittings lasting sixteen days in all, the Railway Rates Tribunal on Thursday, May 4, reserved its decision in the applications by the four main-line railway companies and the London Passenger Transport Board for sanction to an increase of 5 per cent. in certain fares in the London Passenger Transport Area. The inquiry opened on March 20, and was resumed on April 18 after the Easter recess. Over 100 objections were lodged to the application. As explained in *THE RAILWAY GAZETTE* of March 24, 1939, at page 492, the total annual increase estimated to accrue to the London Passenger Transport pool if the proposed increases are sanctioned, is £1,179,000, of which the main-line companies would earn £515,000, and London Transport £664,000. On this basis, under the pooling arrangement, £732,000 of the estimated increase would accrue to London Transport, £300,000 to the Southern, £71,000 to the L.N.E.R., £60,000 to the L.M.S.R., and £16,000 to the Great Western. For the main-line companies it was estimated that £300,000 could be obtained by raising fares below the standard up to the standard, leaving only £215,000 within the jurisdiction of the tribunal. Of London Transport's additional revenue of £664,000 it was considered that the tribunal would be required to sanction only £5,000, the balance being obtainable under existing powers.

Evidence was given in support of the applications by Mr. Frank Pick, Vice-Chairman of London Transport on March 21, and on March 23 on the subject of the pool. Sir William V. Wood supported the case for the main-line companies on March 23, in the course of which he showed that since 1933 the working costs in the London area had increased in a greater proportion than those outside. He thought it desirable to apply an all-round increase so as to preserve the relationship between the various classes of fares. His evidence was continued on March 24 and March 27. Mr. Pick was recalled on March 27 to give general evidence in support of his case, which was continued on March 28, and again on April 18 when the tribunal resumed its inquiry after the Easter recess. His cross-examination began on April 18 and was continued on April 20 and 21. On that day Sir William V. Wood was recalled for further examination, and this concluded the case for the applicants.

The cases for the opponents were opened in the afternoon of April 21. Apart from general complaints as to overcrowding and as to the level of the present fares, the suggestions made by the opponents were that increases, if sanctioned, should be for six months only; that before any sanction were

given to increases it should be ascertained how much new revenue was obtainable from the new facilities to be provided under the extensions now under construction; that from certain districts a greater use of bicycles and cars to and from work would be made if the fares were raised; that smaller appropriations to renewals would enable the obligations of London Transport to be met; that the proper solution of London Transport's difficulties was an amendment of the Act of 1933; that the London area fares were subsidising the goods traffic.

Sir Walter Monckton, K.C., replied on behalf of the applicants on May 2 and May 4. The tribunal, he submitted, should have regard to the desirability of the establishment by London Transport of an adequate reserve fund. The pool did not of itself give a fair return, although it did attempt to give a fair division of the revenue which came into it. It was

for Parliament to say what was in the public interest, and the Act of 1933 had specified the return which in the public interest the "C" stockholders should have. Parliament intended that the companies should have a reasonable return for their services, or in other words that they should be enabled to pay their way. If hardship in the matter of paying fares was a test which should be applied, it ought to have more weight in places other than London, which was not itself a distressed area. There was also the greater cost of providing facilities for London, and the smaller revenue per passenger. The reasonableness of a charge should be measured by the reasonableness of the return for the service rendered. The fares authorised by Parliament should be presumed to be reasonable, and the financial position of a railway company must be considered. It was the intention of Section 59 of the Railways Act, 1921, that all classes of revenue should contribute to the earnings of the main-line companies, and therefore the London suburban traffic should contribute its fair quota.

Great Western & Southern Air Lines

A new company known as Great Western & Southern Air Lines Limited now undertakes all air services previously operated by Railway Air Services Limited in the territories of the Southern Railway and Great Western Railway Companies, and those previously operated by Channel Air Ferries Limited. De Havilland "Rapide" aircraft are used on all routes, except the Devon and Cornwall sections, where the De Havilland "Dragon" type is employed. Both types of machine are twin-engined, equipped

with up-to-date navigational instruments and, of course, carry wireless. The only difference between the two types is that the former is an eight-seater, cruising at approximately 135 m.p.h., and the latter is a seven-seater, cruising at approximately 115 m.p.h. The company is running a daily service linking Brighton and Bournemouth *via* the Isle of Wight; London and the Isle of Wight by rail and air *via* Shoreham-by-Sea; Penzance (Land's End) and Isles of Scilly; and a weekday service between Brighton and Liverpool *via* the Isle of Wight, Southampton, Bristol, Birmingham, and Manchester. On Mondays and Fridays a service will connect London (Croydon) and Luxembourg.

Additional services are also being operated on and from the dates indicated: Brighton and Cardiff *via* Isle of Wight, Bournemouth, Bristol (weekdays only, from May 8); Bristol and Penzance (Land's End) *via* Exeter and Plymouth (weekdays only, from May 8); London (Heston and Croydon) and Isle of Wight (at week-ends from May 26); London (Croydon) or Shoreham and Le Touquet or Deauville (from May 26). Great Western & Southern Air Lines, by reason of its rail association is able to offer special facilities, including: circular tours by air, rail, and sea; interchange between rail and air for holders of return tickets; the forwarding of luggage in advance by rail; acceptance of railway bulk travel vouchers; also reduced rates by air for passengers holding railway season tickets available between points served by air lines. A poster produced to advertise the new services is reproduced herewith.

GREAT WESTERN & SOUTHERN AIR LINES
RAILWAY AIR SERVICES & ISLEY AIR SERVICE

SUMMER SERVICES, 1939
Fares and conditions of carriage apply to all services.
Connections with London, Brighton, Bournemouth, and other stations.
Routes: London - Brighton - Bournemouth - London.
London - Brighton - Bournemouth - London.
London - Brighton - Bournemouth - London.
London - Brighton - Bournemouth - London.

STAFF AND LABOUR MATTERS

Holidays with Pay

A booklet (obtainable from the Stationery Office, price 9d.) was published by the Ministry of Labour on May 8, setting out what has been achieved by collective agreements to give holidays with pay. A foreword to the booklet states: "The report of the Amulree Committee on Holidays with Pay contained as one of its principal conclusions a unanimous recommendation that the grant of such holidays under voluntary agreements between organisations representing employers and workers should be extended to the utmost practicable extent and at the earliest possible date. The present booklet will, it is hoped, be of some assistance to those who are concerned in making or revising such agreements. It is a record of what has already been achieved in this sphere and summarises the main provisions commonly contained in such agreements; in addition it gives the texts of some of the principal agreements or of those which include features of special interest. It will therefore serve as a reminder of the points to be covered by an agreement and will indicate how these points have been covered in other cases."

When the report of the Amulree Committee was presented to the Minister of Labour in April, 1938, the committee estimated that at the end of March, 1938, consecutive days of holiday with pay, in some form, were provided for only about 7½ million workpeople, out of a total of about 18½ million workpeople in the employment field. Of the total of 7½ million, a large proportion was granted paid holidays under the provisions of collective agreements between employers, or their organisations, and the trade unions concerned, the total number of manual wage-earners covered by such collective agreements being estimated at about 3 million in March, 1938, as compared with 1½ to 1½ million when the committee was appointed.

The booklet states that since the date of that report there has been a further extension of collective agreements providing for annual paid holidays, and the total number of workpeople now covered by such agreements is estimated at about 4 million. The full texts of some of the principal agreements are given in the booklet, and among these the arrangements in regard to holidays to conciliation grades in the railway service are quoted. These agreements, it is stated, have been selected as covering important industries or, where not covering important industries, as embodying certain special points of interest.

The length of the holiday is generally defined either in weeks or in days. The most usual period is one week or six days, but in certain cases (*e.g.*, Government and municipal ser-

vice, and co-operative employment) longer periods up to two weeks or 12 or 14 days are fairly common. Sometimes, but not always, provision is made for the case of a public holiday falling within the holiday period. By the terms of some agreements the worker in this event is entitled to an additional day's holiday, at any rate in the case of some of the public holidays.

While it is the general rule for the agreements to fix the length of the holiday there are some agreements which contain no provisions on this matter. The principal instance is the general agreement for the engineering industry, which provides for the holiday payment to be made out of a fund made up of accumulated weekly credits. The most common type of provision on the question of the time at which holidays are to be taken, is that which stipulates that holidays shall be taken between definite dates in the summer months, *e.g.*, between May 1 and September 30.

On the question of allowances to workers who leave their employment before the holiday, the booklet gives prominence to the agreement in regard to the conciliation grades of the railway service, which provides as follows:—

Period of service (from date of previous year)	Leave to be granted
Under 3 months	Nil
3 months and under 6 months	2 days
6 " " " 9 " " "	4 "
9 months and over	6 "

In the great majority of the agreements no reference is made to the question whether the workers may accept other employment during their holiday period. Some agreements, however, contain clauses prohibiting the acceptance of paid employment during the holiday, and stipulating that, in the event of such cases arising, the holiday payment shall be forfeited, any money already paid to the worker in respect of the holiday being refunded to the employer, *e.g.*, by deductions from future wages.

A certain number of agreements deals with the position of employees who are retained for maintenance or other special work while the establishment is closed down for general work during the holiday period. In such cases it is usually provided that these employees shall receive a paid holiday at a later date. Some of the agreements also contain provisions as to the appropriate rate of pay for the workers so retained.

The conditions as to length and continuity of service in many agreements are such as necessarily exclude casual, temporary or part-time workers from the benefit of the paid holiday. In other agreements, on the other hand, the conditions are sufficiently elastic to make it possible for such workers

to benefit to some extent from the holiday provisions. Few agreements, however, specifically refer to workers of this type. Of those that do so, some expressly exclude them from the scope of the agreement, while others allow a paid holiday subject to certain conditions. For example, in the general agreement for road motor transport workers in England and Wales the holiday arrangements apply to "regular employees" only, while in the railway service casual workers are not entitled to the week's paid holiday unless regularly employed for not less than 12 months.

Moral Re-armament

A meeting was held at the Holborn Restaurant, London, on May 8, for the purpose of stating before an audience of representatives of the specialised press the principles of the Moral Re-armament campaign for the restoration of confidence in business. Business men of prominence in various departments of industry described personal experiences in applying the doctrines of Moral Re-armament to their commercial lives.

Mr. Stephen Foot, a former Manager of the Shell Oil Co. Ltd., presided. He described the gathering as unique, in that nearly every major industry was represented by the editors or others associated with specialised journals. Mr. Foot then introduced the various speakers in turn.

Mr. Roger Hicks recalled that June 4 would be the first anniversary of the meeting at which Dr. Buchman, leader of the Oxford Group, had launched the Moral Re-armament campaign. The co-operation of business had been secured at once, and advertising space had been freely presented.

Mr. Austin Reed, Chairman of Austin Reed Limited, London, said that he had learned from the Oxford Group what a spirit of fellowship could do in establishing confidence between business competitors. The trade press could do a great service to this country by killing that old dictum, "business is business." That really meant they expected to do things in business as business men which they would not do in their private lives—in other words, that broadly speaking business was on a lower ethical level than that to which they were prepared to subscribe as individuals.

After other speakers had related individual experiences, Mr. Kenaston Twitchell summed up the aims of the movement by saying that at present the human element was the one factor preventing exploitation to the common good of modern world resources. Moral Re-armament would re-direct the human factor into a combined effort instead of a disruptive force. Business men had international contacts, and unless they took responsibility for the international situation it would never be solved.

RAILWAY AND OTHER MEETINGS

Canadian Pacific Railway Company

The annual general meeting of the Canadian Pacific Railway Company was held on May 3 at Windsor station, Montreal, Sir Edward Beatty, Chairman and President, presiding.

The chairman in moving the adoption of the report and accounts first expressed the pleasure they felt at the visit of the King and Queen to Canada; the company was privileged to share in the provision of facilities for the care and comfort of Their Majesties while in the Dominion.

The annual report for 1938 showed the first major interruption of the slow but steady recovery since 1933. Gross earnings for the first three months of the current year declined \$820,000, or 2.7 per cent., as compared with those of 1938. Since January earnings had been running at approximately the same level as a year ago. Several of their weekly earnings statements had shown a moderate increase over those of the corresponding period of last year. Working expenses for the first quarter declined \$1,040,000, or 3.6 per cent., as compared with those of 1938, despite an increase of \$431,000 owing to the fact that in 1939 there had been no deductions from basic rates of pay corresponding to those in effect in 1938. As the basic rates had been fully restored by April, 1938, the comparative results for the remainder of this year would not be adversely affected by this factor. Net earnings for the first quarter showed an increase of \$220,000. The co-operative measures they had arranged with the Canadian National Railways would include certain line abandonments, and there would necessarily be certain resulting charges to profit and loss for properties retired and not replaced. Their properties were in such physical condition that a much larger volume of traffic than was now available could be handled with no more than a normal increase in expenses.

The corporate condition was sound and the capitalisation well balanced. The results of the past eight years might appear depressing, but they had to be considered in the light of the general business conditions on the American continent, which had forced many railroads into bankruptcy. In the case of their own company, earnings also had been adversely affected by repeated droughts in the grain-growing territories which it served, and by unusually low prices for the staple products of that area. The relative importance of that factor in the company's affairs was apparent when it was noted that almost 60 per cent. of their gross freight earnings were normally attributed to western lines. Railways on the American continent would continue to face serious problems in readjusting their operations to changed economic conditions; they had gradually been losing the preponderance of traffic they once enjoyed.

Competition, though less marked in Canada than in many other countries,

existed, and continued to grow. The exigencies of the depression had increased the effects. As a result, the recovery of the railways from the depression had not been as great as that enjoyed by industry generally. Unfortunately, this period of acute competition and depressed volume of traffic was accompanied by one of disproportionate increase in expense. Despite the depressed conditions in the industry, the rates of pay of railway employees, on a "real wage" basis, were higher than ever before. Direct and indirect taxation had increased substantially. The Chairman then quoted figures showing the effect of those general trends on the earnings of the company. He hoped that the report of the Royal Commission appointed by the Ontario Government to study the question of highway transportation would prompt the other provinces to adopt a similar policy; they might then anticipate a lessening, if not an end, of the unfair highway competition.

The Chairman then spoke of the proposed unification of the Canadian Pacific and the Canadian National

Railways. Their company would gain from such a policy. It would share in the direct savings obtained, and share indirectly in important benefits which would follow the stimulus given to the business of Canada by the elimination of a troublesome national problem. The greatest benefit, however, would be the relief to the public of the burden of wasteful duplicate expenditure. For that reason he had regarded the railway problem as primarily presenting an opportunity for their company to co-operate with the Government of Canada in the national interest.

The Chairman discussed at some length the subject of co-operation, and wound up this topic by expressing his conviction that, notwithstanding the difficulties it faced, the Canadian Pacific was able to maintain its independence for years to come. It was not easy to forecast events. Canada, however, was still one of the greatest remaining fields in the world for expansion of population and development of natural resources, and he thought that with a sound policy of elimination of unnecessary railway duplication and control of competing transport services the Canadian Pacific might look forward more confidently to the future than railways in most other countries.

The report and accounts were adopted.

RAILWAY AND OTHER REPORTS

West of India Portuguese Guaranteed Railway Co. Ltd.—The dividend for the half-year to June 30 is to be 2½ per cent., plus a bonus of ¼ per cent., making 3¾ per cent., the same as a year ago.

Midland Railway Co. of Western Australia Ltd.—The directors have authorised an interim payment of interest on the second mortgage cumulative income debenture stock on account of the year ending June 30, 1939, of 2 per cent., less income tax at 5s. 6d. in the £, payable July 1, 1939.

P.L.M. Railway Company.—The dividends for the year 1938 are fr. 70 a share on the ordinary shares and fr. 50 a share on *jouissance* shares, in both cases the same as for the previous year. The agreement of 1921, under which the company continued to operate the Algerian railway system, terminated at the end of the year.

Beyer Peacock & Co. Ltd.—The accounts for the year 1938 show a trading profit of £81,445, compared with £50,749 for 1937, and a net profit, after providing for interest, fees, £10,778, depreciation reserve, &c., of £51,074, against £24,736. This enables the debit balance of £49,149 brought in to be eliminated, leaving a credit balance of £1,925. There was a decided increase in locomotive manufacturing activity during the year, but there is still a margin between the output for the year and the total capacity of the company's production facilities. Certain equipment has been engaged on work in connection with rearmament, but the total so employed

to date is only a relatively small part of the company's resources. The Richard Garrett Engineering Works subsidiary at Leiston has made further satisfactory progress, and the outlook indicates the possibility of a contribution to the parent company's profits by way of dividend.

Buenos Ayres & Pacific Railway Co. Ltd.—The directors with the concurrence of the stockholders' committee have resolved that a payment of one half year's arrears of interest to January 1, 1935, less income tax at 5s. 6d. in the £, be made on June 9 next on the 4½ per cent. consolidated debenture stock of the Buenos Ayres & Pacific Railway Co. Ltd., to all holders on the register at the close of business on May 10, 1939, and that the Argentine Great Western Railway Co. Ltd. be handed a sum sufficient to enable that company to distribute on June 9 next one half year's arrears of interest to April 1, 1935, on its 5 per cent. debenture stock.

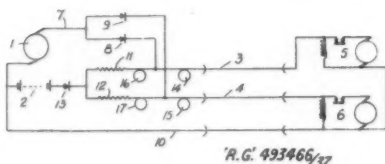
Northern Ireland Road Transport Board.—In a statement of guarantees given by the Northern Ireland Ministry of Finance during the financial year ended March 31 last, issued as a White Paper, it is revealed that the Ministry has guaranteed a loan of £950,000 for the Northern Ireland Road Transport Board. As a sum of £1,800,000 has already been guaranteed by the Ministry under the Road & Railway Transport Act (1935) the total guarantee is now £2,750,000. The period of the guarantee is not exceeding five years from August 23, 1935.

ABSTRACTS OF RECENT PATENTS*

No. 493,466. Operating Railway Points and Signals

J. Woodforde and Westinghouse Brake & Signal Co. Ltd., all of 82, York Road, King's Cross, London.—(Application date: April 9, 1937.)

A system for the electrical operation of points and signals comprises a hand, &c., operated generator 1 for operating



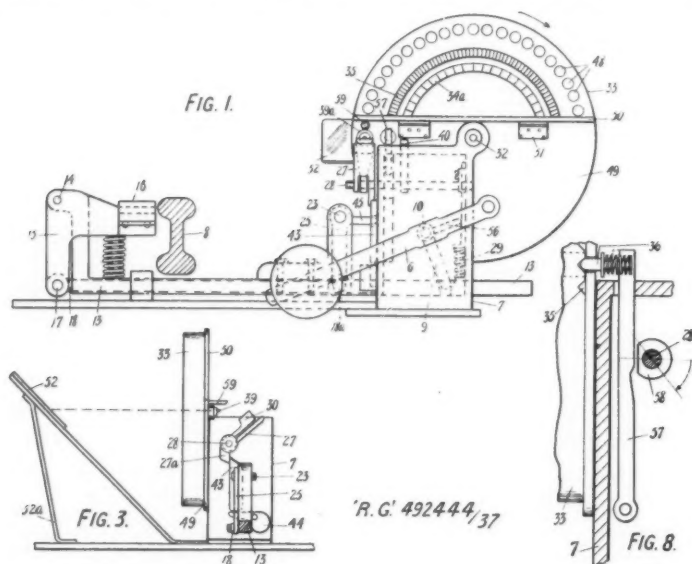
the points, &c., 5, 6 through wires 3, 4, a battery 2 for supplying current to hold the points, &c., in position after the generator has stopped, and rectifiers 8, 9, 13 to prevent current from passing between the generator and battery. Switches 14, 15 in the lines 3, 4 control the generator current, and may be connected to switches 16, 17 controlling the battery current, so that the battery is connected to the lines 3, 4 only when the switches 14, 15 are moved to close the generator circuit.—(Accepted October 10, 1938.)

No. 492,444. Detonator Apparatus

A. C. Stewart, of Crianlarich Hotel, Crianlarich, Perthshire, and J. Campbell, of Clan House, Doune, Perthshire.—(Application date: March 20, 1937.)

A treadle actuated detonator mechanism, in which the treadle is

moved away from and towards the rail by a connection to the signal, such movement effecting the cocking of the apparatus and bringing a new cartridge into position, has the magazine mounted to rotate on a horizontal axis with the cartridges arranged lengthwise and discharging against a baffle member whereby the flash is deflected upwards. The magazine is a vertical disc 33, arranged so that the cartridges 48 discharge parallel to the track before being deflected by the baffle plate 52, Fig. 3, when fired by a treadle-released hammer 30. This hammer is cocked by the inward movement of the treadle away from the rail when the wayside signal is put at "clear"; the treadle is, of course, returned to the operative position when the signal is put at "stop." The treadle is in the form of a depressible bow spring 16 fixed to a pivoted member 15 which is linked to a bell-crank 25, 45, the arm 45 of which depresses a detent 43 and thereby releases the hammer 30. This treadle linkage is carried by a bar 13, moved to and from the rail 8 by an arm 9 on the shaft 10 of a counterweighted lever 6 connected to the signal wire. On movement of the bar 13 to the left, an arm 56 on the shaft 10 depresses a slide 54 against the action of a spring 29; this slide rocks a shaft 28 whereby the hammer 30 is swung back into cocked position, and the cartridge disc 33 is stepped forward by a pawl. The detent 43, by which the hammer is held cocked, is biased upwards by a counterweighted lever 44. A side cover plate for the cartridge disc has the



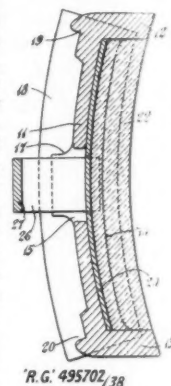
* These abridgments of recently published specifications are specially compiled for THE RAILWAY GAZETTE by permission of the Controller of His Majesty's Stationery Office. Group abridgments can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, either sheet by sheet as issued, on payment of a subscription of 5s. a group volume, or in bound volumes, price 2s. each, and the full specifications can be obtained from the same address price 1s. each

upper half 50 hinged to give access for refilling. So long as the mechanism is cocked, the disc is locked against movement, as a cam 58, Fig. 8, on the shaft 28 depresses a tappet lever 57 against a locking pin 36, which at other times can move against the action of its spring.—(Accepted September 20, 1938.)

No. 495,702. Brake-blocks

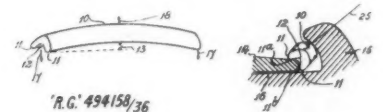
E. T. Brook, of 62, Ramillies Road, Bedford Park, London. W. S. Graff-Baker, of 4, Edwardes Square, Kensington, London, and London Passenger Transport Board of 55, Broadway, Westminster, London.—(Application date: April 12, 1938.)

A brake-block for railway vehicles, having a friction surface that is partly metallic and partly non-metallic, comprises a metal body having a single insert of non-metallic material held between end flanges of the body, the braking surface comprising solely the face of the insert and those of the flanges. The cast iron main body 11 of the block has upper and lower flanges 12, 13 connected on one side by a narrow ledge 14 against which the insert 22 of non-metallic material abuts. Remote from the ledge 14 the body is formed with an integral lip 18 which engages over the wheel flange. The insert has a U-shaped lug 26 the ends of which pass through a steel reinforcing plate 24 embedded in the insert and which receives a wedge or key for attaching the insert to the body.—(Accepted November 18, 1938.)

**No. 494,158. Securing Railway Rails**

Executors of J. Mills Limited, of Bredbury Steel Works, Bredbury, Chester.—(Convention date: April 18, 1936.)

A key 10 for securing a rail in its support by being forced between the rail foot and an abutment 15 on the



support, is made of spring steel which, after fabrication of the key, is heat treated to harden and temper it. The key may be shaped or bent so that it engages the rail foot at its two ends and the abutment at the middle. It may be formed with a re-entrant angle 12 so that it engages the edge and top of the rail foot. In another form, the key is flat on the outer face, and the rail engaging face has a groove.—(Accepted October 19, 1938.)

XUM

NOTES AND NEWS

The Coronation Scot at the World's Fair.—The L.M.S.R. announces that a total of 34,669 people inspected the Coronation Scot train during the first week for which it was on exhibition at the World's Fair, New York (April 30 to May 6).

Improvements at London Road Station, Manchester.—The L.N.E.R. has arranged to raise the level of platform C at London Road station, Manchester. The platform is at present 2 ft. 2 in. in height above the rails, and is considerably below the level of the carriage floor. It is to be raised to the standard height of 3 ft., and the adjoining carriage way will also be raised.

Federated Malay States Railways in March.—Federated Malay States Railways revenue from all sources for the month of March, 1939, was £131,821, compared with £153,272 for the corresponding month of 1938. The total revenue for the period January to March, 1939, was £408,044, compared with £481,810 for the corresponding period in 1938.

L.M.S.R. and L.N.E.R. Junction at Mill Hill?—In replying to a correspondent, the *L.M.S. Magazine* says that the trend of suburban development does not point to the necessity arising for a third Belsize tunnel in the immediate future. Probable further development of the L.M.S.R. line north of Mill Hill may be by means of a junction with the L.N.E.R. line at that place, with through services over the London Passenger Transport Board's tube lines to the West End.

Continental Outing of Federation of Enginemen's Mutual Improvement Classes.—On Saturday, April 22, members of the Federation of Enginemen's Mutual Improvement Classes left Victoria for a week-end tour of part of the Northern Region of the S.N.C.F. (French National Railways). Boulogne, Longueau, and Amiens were visited. At Amiens, Mr. MacAusland, organiser of the trip, officially thanked the French officers of the S.N.C.F. for their kindness and their efforts to make the visit a success. Monsieur M. Oudry, Inspecteur Divisionnaire (Affaires Générales), interpreted, and later proposed the health of King George VI.

Improvements at Colchester, L.N.E.R.—Work is at present in progress on a scheme of improvements at Colchester station and on the Clacton and Walton branch which joins the main line there, including the provision of new main lines to improve the alignment, new station buildings, new sidings, subways, and improved goods yard at Colchester; lengthening of platforms at Hythe and Thorpe-le-Soken; improvements to stations at Frinton and Walton-on-the-Naze; various additional sidings, and the doubling of the present single line between Thorpe-le-Soken and Clacton. Colour-light signals

are to be installed and will be operated from a relay panel in a signal box of the latest design. The total cost of the scheme will be about £190,000.

New Railway in Russian Ukraine Completed.—A new line of railway from Zolotonosha to Mironovka, 67 miles in length, has now been completed and is expected to be opened for traffic almost at once. It runs through the Provinces of Kiev and Poltava and crosses the River Dniepr near Kanev.

Channel Tunnel Proposal.—A French civil engineer, M. André Basdevant, outlined his scheme for a Channel tunnel at a luncheon given by the French Chamber of Commerce in London on May 2. He proposed a quadruple tunnel with two bores for road and two for rail traffic, and put the cost in round figures at fr. 2½ milliards. The suggested route was for the tunnel to pass under Cape Gris Nez and emerge near Folkestone. He urged the setting up of a committee by the British Government to consider the question.

Prestatyn Holiday Camp.—Excellent progress is being made with the holiday camp now being laid out at Prestatyn, which is jointly owned by the L.M.S.R. and Thomas Cook & Son, and is to be opened on June 24. The camp occupies a site of 58 acres adjacent to the sea, and will have accommodation for from 1,500 to 1,700 people, housed in chalets of three different types. These chalets, together with the reception, dining, recreation, and administrative quarters, are permanent structures and have been designed by Mr. W. H. Hamlyn, F.R.I.B.A., Chief Architect of the L.M.S.R. During the height of the season a staff of about 300 will be employed at the camp.

Royal Journey to Portsmouth.—The King and Queen left Waterloo station at 12.45 p.m. on May 6 for Portsmouth, to join the *Empress of Australia* for their voyage to Canada. They were accompanied to the station by Queen Mary, other members of the Royal Family, and members of the Government. The special train consisted of four Pullman cars, drawn by express locomotive No. 718. The royal party was received on the platform (specially decorated for the occasion) by the Chairman of the Southern Railway, Mr. R. Holland Martin, C.B., accompanied by the General Manager, Mr. Gilbert S. Szlumper, C.B.E., and the Traffic Manager, Mr. E. J. Missenden, O.B.E., who travelled in charge of the train. The train crew consisted of Driver Snow, Fireman Cuttings, and Guard King. Southern Railway officials travelling on the train with the royal party included the General Manager, the Traffic Manager, the Superintendent of Operation (Mr. H. E. O. Wheeler, O.B.E.), and the Locomotive Running Superintendent (Mr. A. Cobb). The train was given a path as fast as the

90-min. Portsmouth expresses just prior to electrification, and arrived at the Town station nearly 5 min. early. Mr. J. C. Patterson, European Manager of the C.P.R., is travelling to Canada on the *Empress of Australia*.

Railway Students' Association.—It was incorrectly stated in our May 5 issue that the chair at the meeting of this association on April 27, when Mr. Ashton Davies delivered his presidential address on Railway Salesmanship, was taken by Mr. L. W. Orchard. The Chairman was, in fact, Brig.-General Sir H. Osborne Mance. Mr. Orchard is Chairman of the committee of the association, and presided at the annual meeting which followed the address.

Canadian Pacific Earnings.—Gross earnings of the Canadian Pacific Railway for the month of March, 1939, amounted to \$10,451,000, a decrease of \$17,000 in comparison with March, 1938. Working expenses were \$9,677,000 or \$424,000 lower, leaving net earnings \$407,000 higher, at \$774,000. For the first quarter of 1939, gross earnings were \$29,346,000, a decrease of \$820,000 in comparison with the first quarter of 1938, and the net earnings of \$1,468,000 showed an advance of \$220,000.

Canadian National Earnings.—The March, 1939, gross earnings of the Canadian National Railways were \$14,632,661, an increase of \$21,032 in comparison with March, 1938. Operating expenses amounted to \$15,027,061, with a decrease of \$458,249, resulting in a deficit of \$394,400, which is \$479,281 less than that for March, 1938. Aggregate gross earnings for the first quarter of 1939 amounted to \$41,197,441, a decrease of \$25,541 in comparison with the first quarter of 1938, and the deficit on working was \$2,289,938, or \$1,441,716 lower.

Further Brussels-Antwerp Electric Services.—With the introduction of the Belgian State Railways timetables on October 8 next, the whole of the passenger train services between Brussels and Antwerp will be electrically worked to standard times. At the hour and half-hour there will be a direct train covering the 27½ miles in 30 min.; at 15 and 45 min. past the hour, a semi-fast train in 40 min.; at 4 and 34 min. past the hour, a stopping train in 50 min. During rush periods the service will be increased. Additional electric rolling-stock is being constructed for this extra service, various alterations are being made to the stations, and colour-light signalling installed on the two tracks now used only by steam traffic.

Annual Review of Railway Charges.—The Railway Rates Tribunal will sit at 10.30 a.m., on Wednesday, June 14, in the Incorporated Accountants' Hall, Victoria Embankment, W.C.2, to review the standard and exceptional charges of each of the amalgamated railway companies pursuant to the provisions of Section 59 of the Railways

Act, 1921. The accounts and statements relative to such review lodged with the tribunal by the companies may be inspected at the office of the registrar, Bush House, Aldwych, W.2. Copies of the statements lodged by each of the four companies (price 7s. 6d. each, or £1 10s. per set, post free) may be obtained from Mr. G. Cole Deacon, Fielden House, 10, Great College Street, S.W.1. Notices of objection relative to the review must be filed with the registrar on or before Thursday, June 1.

G.W.R. Robins Bolitho Ambulance Shield Competition.—Four teams participated in the annual competition for the Robins Bolitho ambulance shield, which took place at the Western Hotel, Penzance, on April 26; Dr. W. Blackwood, County Commissioner, S.J.A.B., acted as adjudicator. Mr. A. W. H. Christison, Divisional Locomotive Superintendent, presided over the presentation, and the teams were entertained by Mrs. E. H. W. Bolitho, wife of the Lord Lieutenant. Among those present were the Mayor

of Penzance, Councillor J. Birch, J.P., and the Mayoress, Miss Dorothy Harvey. The result of the contest was as follows: (1) St. Ives, 90 marks; (2) Truro Traffic, 79 marks; (3) Truro Loco., 72 marks; (4) Penzance, 62 marks. The challenge shield was presented by Mrs. Bolitho. Mr. J. H. Tippet, Divisional Ambulance Secretary, appealing for an increase of entries, spoke of the value of the competition side of ambulance work. A vote of thanks to Mrs. Bolitho, the Mayor and Mayoress, Mrs. G. B. Morris and other supporters, was carried with acclamation on the motion of Mr. H. E. Tucker, Stationmaster.

Forthcoming Events

May 15 (Mon.).—Associated Road Operators, at Grosvenor House, Park Lane, London, W.1, 12.15 for 12.45 p.m. Luncheon.
May 17 (Wed.).—Institution of Railway Signal Engineers, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m. "A Description of the Signalling and Interlocking Arrangements on the Metre Gauge System of the B.B. & C.I. Railway," by Mr. H. Towers.

British and Irish Railway Stocks and Shares

Stocks	Highest 1938	Lowest 1938	Prices	
			May 10, 1939	Rise Fall
G.W.R.				
Cons. Ord. ...	65½	25½	30½	+4
5% Con. Prefce....	118¾	74	82½	+7½
5% Red.Pref.(1950) ...	111¾	90	89	—
4% Deb. ...	111	97½	96½	+4
4½% Deb....	112½	100½	98	+3
4½% Deb....	118½	104	102½	+2
5% Deb.	131½	119	114½	+2
2½% Deb....	69¾	60	59	-1
5% Rt. Charge ...	129	114	108	+1½
5% Cons. Guar. ...	128½	103	101½	+2½
L.M.S.R.				
Ord.	30½	11	14	+1½
4% Prefce. (1923) ...	70½	23	38½	+7
4% Prefce.	82½	43¾	58	+6½
5% Red.Pref.(1955) ...	103½	66	75½	+6
4% Deb.	105½	85	92½	+6
5% Red.Deb.(1952) ...	114½	105	105½*	-1
4% Guar.	102¾	77½	82½	+6½
L.N.E.R.				
5% Pref. Ord. ...	89½	3½	4½	+½
Def. Ord. ...	47½	21½	25½	+½
4% First Prefce.	68½	21	32½	+6
4% Second Prefce.	27½	8	13½	+3½
5% Red.Pref.(1955) ...	97	40½	51½	+5
4% First Guar.	97½	66½	72½	+7
4% Second Guar.	91½	52	62½	+9
3% Deb.	79½	60	66½	+6
4% Deb.	104½	77	85½	+5
5% Red.Deb.(1947) ...	110½	97	102½	—
4½% Sinking Fund Red. Deb.	108½	101	100	—
SOUTHERN				
Pref. Ord.	87	47½	67	+5
Def. Ord.	21½	9½	14	+1½
5% Pref.	115	83	91½	+6½
5% Red.Pref.(1964) ...	115½	98	95½	—
5% Guar. Prefce.	128½	106	107	+1
5% Red.Guar.Pref.(1957) ...	116	109½	107½	+2
4% Deb.	109½	95	97½	+4
5% Deb.	129	117	113	+½
4% Red. Deb.	107	101½	100½	-1
1962-67				
BELFAST & C.D.				
Ord.	4	3½	4	—
FORTH BRIDGE				
4% Deb.	102	99½	94½	—
4% Guar.	103½	94½	92	—
G. NORTHERN (IRELAND)				
Ord.	5½	2½	3½	—
G. SOUTHERN (IRELAND)				
Ord.	25½	8½	8	—
Prefce.	35	13	12½	—
Guar.	70½	30½	25½	—
Deb.	83	56	46½	-½
L.P.T.B.				
4½% "A"	119½	107½	107½	+2½
5% "A"	130	117	114½	+1
4½% "T.F.A."	108	98	101½	—
5% "B"	122½	105	107½	+2
"C"	84	68	69½	+5
MERSEY				
Ord.	24½	16½	20	—
4% Perp. Deb.	102½	94½	91	—
3% Perp. Deb.	77	69	66½	—
3% Perp. Prefce.	66½	57	51½	—

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 18th Week			Totals to Date		
	1939	1938	Inc. or Dec.	1939	1938	Inc. or Dec.
L.M.S.R. (6,830 mls.)	£	£	£	£	£	£
Passenger-train traffic...	430,000	443,000	- 13,000	7,530,000	7,717,000	- 187,000
Merchandise, &c. ...	505,000	470,000	+ 35,000	8,146,000	8,620,000	- 474,000
Coal and coke ...	274,000	262,000	+ 12,000	5,186,000	5,029,000	+ 157,000
Goods-train traffic ...	779,000	732,000	+ 47,000	13,332,000	13,649,000	- 317,000
Total receipts ...	1,209,000	1,175,000	+ 34,000	20,862,000	21,366,000	- 504,000
L.N.E.R. (6,320 mls.)						
Passenger-train traffic...	277,000	275,000	+ 2,000	4,949,000	5,045,000	- 96,000
Merchandise, &c. ...	317,000	310,000	+ 7,000	5,642,000	6,108,000	- 466,000
Coal and coke ...	242,000	231,000	+ 11,000	4,698,000	4,687,000	+ 11,000
Goods-train traffic ...	559,000	541,000	+ 18,000	10,340,000	10,795,000	- 455,000
Total receipts ...	836,000	816,000	+ 20,000	15,289,000	15,840,000	- 551,000
G.W.R. (3,737½ mls.)						
Passenger-train traffic...	186,000	187,000	- 1,000	3,190,000	3,230,000	- 40,000
Merchandise, &c. ...	215,000	192,000	+ 23,000	3,458,000	3,493,000	- 35,000
Coal and coke ...	106,000	98,000	+ 8,000	2,067,000	2,108,000	- 41,000
Goods-train traffic ...	321,000	290,000	+ 31,000	5,525,000	5,601,000	- 76,000
Total receipts ...	507,000	477,000	+ 30,000	8,715,000	8,831,000	- 116,000
S.R. (2,140 mls.)						
Passenger-train traffic...	280,000	281,000	- 1,000	5,002,000	5,027,000	- 25,000
Merchandise, &c. ...	57,000	52,000	+ 5,000	1,041,500	1,091,000	- 49,500
Coal and coke ...	23,000	20,000	+ 3,000	615,500	602,000	+ 13,500
Goods-train traffic ...	80,000	72,000	+ 8,000	1,657,000	1,693,000	- 36,000
Total receipts ...	360,000	353,000	+ 7,000	6,659,000	6,720,000	- 61,000
Liverpool Overhead ...	1,273	1,488	- 215	23,394	23,950	- 556
(6½ mls.)						
Mersey (4½ mls.) ...	4,759	4,639	+ 120	81,151	79,754	+ 1,397
* London Passenger Transport Board ...	579,200	567,000	+ 12,200	25,556,100	25,307,200	+ 248,900
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,950	1,924	+ 26	32,928	32,773	+ 155
" " goods	463	436	+ 27	7,774	7,859	- 85
" " total	2,413	2,360	+ 53	40,702	40,632	+ 70
Great Northern pass. (543 mls.)	9,400	9,150	+ 250	157,600	154,900	+ 2,700
" " goods	10,400	7,800	+ 2,600	179,450	156,000	+ 23,450
" " total	19,800	16,950	+ 2,850	337,050	310,900	+ 26,150
Great Southern pass. (2,076 mls.)	35,002	35,022	- 20	536,100	542,789	- 6,689
" " goods	45,661	40,760	+ 4,901	738,077	725,621	+ 12,456
" " total	80,663	75,782	+ 4,881	1,274,177	1,268,410	+ 5,767

* 45th Week (before pooling)

* ex dividend

CONTRACTS AND TENDERS

Further Express Beyer-Garratts for Algeria

The Société Franco-Belge de Matériel de Chemin de fer has received an order from the Algerian State Railways for a further seven express passenger Beyer-Garratt locomotives to be built in collaboration with Beyer, Peacock & Co. Ltd. These are an addition to the order for six referred to in our issue of September 30, 1938. When these 13 engines now under construction are delivered there will be 30 of this type of 60,000-lb. tractive effort fast passenger Beyer-Garratt engines operating on the standard gauge of these railways.

The Associated Equipment Co. Ltd. has received repeat orders from the Halifax Corporation for three Regal and five Regent passenger vehicles.

Wagons and Coaches for Egypt

The Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received contracts from the Egyptian State Railways Administration for the supply of 70 15-ton bogie flat wagons and 10 bogie third-class carriages, the latter forming an extension of an order already in hand for 20 coaches of the same type. All the coaches will be mounted on Sheffield-Twinberrow bogies.

The L.N.E.R. is to provide a six-ton petrol electric crane and a one-ton power-driven crane for use in agricultural show grounds. Each crane will be fitted on a motor chassis, and will be used principally for dealing with containers and the unloading and loading of individual exhibits at agricultural shows. In connection with the installation of these cranes H. J. Coles Limited has received an order for a six-ton petrol-electric mobile lorry crane and Latil Industrial Vehicles Limited has received an order for the provision and mounting of a crane attachment to a Latil tractor.

Colchester Station Improvements

M. T. Shaw & Co. Ltd. has received a contract from the L.N.E.R. for the construction of a new awning over the up platform at Colchester station. This is part of the scheme of reconstruction which is now in progress at this station.

Robert Stephenson & Hawthorns Limited has received an order from the Leopoldina Railway for two locomotive boilers for rack engines.

The General Electric Co. Ltd. has received a contract from the L.N.E.R. for a twelve months' supply of Osram lamps.

The Chinese Government Purchasing Commission, on behalf of the Chinese Minister of Communications, has placed orders for equipment for the Szechuen-Yunnan Railway, to be supplied to the inspection of Messrs. Fox & Mayo, as follows:—

P. & W. MacLellan Limited: Stocks and dies.

English Tools Limited: Permanent-way tools.

S. A. Gilsoco has received an order from the Argentine North Eastern

Railway for 100,000 mild steel dog-spikes.

D. Wickham & Co. Ltd. has received an order from the Central Argentine Railway for one petrol-driven motor gang trolley for the 5ft. 6in-gauge.

Large South African Railway Orders in Hand in the United Kingdom

An order for 90 chassis and nine spare engines for the South African Railways and Harbours Administration's road motor services has just been placed with Albion Motors Limited; the total value of the order is £106,300. Other S.A.R. & H. orders now in hand in Glasgow include 44 locomotives, at a cost of £506,200; two tugs, at a cost of £167,000; and 31 motor chassis, at a cost of £31,468. Glasgow firms are also handling large South African orders for wheels and axles, springs, casings, and tug and dredger replacements. Manchester firms recently completed South African orders for electric and Beyer-Garratt locomotives to the value of more than £850,000, and current orders placed in Manchester for narrow-gauge locomotives, chassis, wheel lathes, &c., total £156,000. Birmingham is at present handling South African railway orders to the extent of £342,000. Luxury coaches, air-conditioned, decorated, and equipped in the most modern way, are under construction by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. in Birmingham for two complete *de luxe* express trains on the Cape Town-Johannesburg service. The units include lounge, observation, and dining cars, and it is understood that the order, at a cost of approximately £165,000, is the first overseas order for complete air-conditioned trains ever placed in the United Kingdom. Several of the coaches have been completed and were inspected at Birmingham a few days ago by Mr. F. J. du Toit, Secretary, and Mr. T. C. Swallow, Advisory Engineer at South Africa House.

The Indian Stores Department is calling for tenders (Tender No. N. 280) for the supply and delivery of quantities of axles and tyres for locomotives, coaching, and goods stock. Tenders, addressed to the Indian Stores Depart-

ment, Simla, must be received by May 22. A copy of the schedule of requirements and conditions of tender, together with drawings, may be borrowed from the Department of Overseas Trade.

The Central Railway of Brazil has requested the Brazilian Government Central Purchasing Committee to call for tenders for the supply of 100,000 tons of English coal briquettes. This large purchase is the first to be made through the committee mentioned.

Tenders are invited by the Iranian Ministry of Ways and Communications for telegraph poles and accessories for the Iranian Railways. Specifications may be obtained from the Commercial Attaché to the Imperial Iranian Legation, Ling House, 10-13, South Street, London, E.C.2.

Edgar Allen & Co. Ltd. announces that it has purchased the undertaking and goodwill, including patents and patent rights, of the British Rema Manufacturing Co. Ltd., Halifax, manufacturer of pulverised fuel plant for cement rotary kilns, boiler and furnace firing, &c., as well as of a wide range of machines. In association with Edgar Allen & Co. Ltd., the British Rema Manufacturing Co. Ltd. will carry on its business in future operating from the works of the machinery department of Edgar Allen & Co. Ltd. at the Imperial Steel Works, Sheffield. Mr. P. G. Ryder, Southern Technical Representative of the company, has been retained, and will operate from the Edgar Allen offices at Artillery House, London. Several members of the technical and sales staff have also been transferred to the works at Sheffield.

We have been informed by Westinghouse Brake & Signal Co. Ltd., of 82, York Way, King's Cross, London, N.1, that the firm's northern representative for metal rectifiers, Mr. W. E. Wilkins, B.Sc., A.M.I.E.E., has changed his address to Agden Lane Farm, Agden, Lymm, Warrington. Tel. No.: Lymm 516.

Mr. C. B. Kingsford has been appointed Manager of the British Thomson-Houston Switchgear Sales Department, Willesden, in succession to the late Mr. G. E. Riley. Mr. L. Drucquer of the same department has been appointed Assistant Manager.

Exports of Railway Material from the U.K. in March

	Mar., 1939	Mar., 1938	Three Months Ending Mar., 1939		Mar., 1938
Locomotives, rail..	100,779	78,916	385,862	329,457	
Carriages and wagons	257,063	447,098	629,486	887,111	
Rails, steel	87,372	143,923	193,275	344,291	
Wheels, sleepers, fishplates and miscellaneous materials	145,043	164,788	456,993	484,093	

Locomotive and rail exports included the following:—

	Locomotives		Rails	
	Mar., 1939	Mar., 1938	Mar., 1939	Mar., 1938
Argentina	16,212	5,314	3,215	4,112
Union of South Africa	—*	—*	3,322	82,551
British India	47,358	11,442	12,154	16,698

* Figures not available

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.
Road and Rail Traffic Act, 1933.

Agreed Charges.

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of

the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The Procedure to be followed in regard to the inspection of the said Applications and the filing of Notices of Objections is that published in the *London Gazette* of 28th July, 1936.

Printed copies of the Procedure can be obtained from the Railway Rates Tribunal, Bush House, Aldwych, London, W.C.2.

Notices of Objection to any of the said Applications must be filed on or before the 30th May, 1939.

A copy of each Application can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, Fielden House, Great College Street, Westminster, London, S.W.1, price 1s. post free.

T. J. D. ATKINSON,
Registrar.

5th May, 1939.

Number of Application.	Name of Trader and General Description of Traffic	Number of Application	Name of Trader and General Description of Traffic
1939		1939	
No. 270	RICHMOND SAUSAGE CO. LTD., 7-11, Linacre Road, Litherland, Liverpool, 21; Sausages.	No. 293	S. SALTER & CO. LTD., Trowbridge; Cloth.
No. 271	KINLOCH (PROVISION MERCHANTS) LIMITED, Overbury Road, London, N.15; Groceries, Preserves, Provisions, etc.	No. 294	G. STIBBE & CO. LTD., 11 to 15, Newark Street, Leicester; Textiles.
No. 272	THOMAS & EVANS LIMITED, Porth, South Wales; Vinegar ex Worcester.	No. 295	WHEATLEY & BATES LIMITED, 14, Napier Street, Sheffield, 11; Hop Bitters, Ginger Beer, etc.
No. 273	A. WELLS & CO. LTD., Stirling Road, Walthamstow, London, E.17; Toys, etc.	No. 296	BENNETT BROS. (HOSIERY METRS. & DYERS) LTD., Southfield Road, Hinkley; Hosiery.
	(Applicable also to traffic consigned by one Associated or Subsidiary Company.)	No. 297	COLEMAN & CO. LTD., Wincarsle Works, Norwich; "Vitacup," etc.
No. 274	SIMPSON, BAKER & CO. LTD., Thames House, Millbank, London, S.W.1; Domestic Electrical Appliances, etc.	No. 298	S. C. JOHNSON & SON LTD., West Drayton, Middlesex; Wax Polish, etc.
No. 275	A. P. BURT & SONS LTD., Severn Paper Mills, Portishead; Paper Bags and Paper.	No. 299	KAY (SPORTS & GAMES) LIMITED, Carlisle Road, The Hyde, London, N.W.9; Toys, etc.
No. 276	WITCHAMPTON BY-PRODUCTS LIMITED, Riverside Works, Weybridge; Firelighters.	No. 300	WM. O'HANLON & CO. LTD., 49 and 51, Dale Street, Manchester; Cotton and Linen Goods, etc.
No. 279	ACHILLE SERRE LIMITED, Blackhorse Lane, Walthamstow, London, E.17; Dyed and Cleaned Goods, etc.	No. 301	SICHEL ADHESIVES LIMITED, Richmond, Surrey; Gums, Glues, etc.
	(Applicable also to traffic consigned by two Associated or Subsidiary Companies.)	No. 302	JOHN WADDINGTON LIMITED, Waddington's Printing Works, Leeds; Satona Cartons.
No. 281	HU. BARNETT & CO. LTD., 4, Springfield Court, Queen Street, Glasgow, C.1; Hessian, Canvas, etc.	No. 303	H. COHEN & CO. (LEEDS) LTD., Westgate Mills, Leeds, 1; Clothing, etc.
No. 282	T. & A. NAYLOR LIMITED, Green Street, Kidderminster; Carpets, etc.	No. 304	M. & S. SEIGAL LIMITED, 32 and 33, Hamell Street, London, E.C.1; Costumes and Mantles.
No. 283	NORCO LIMITED, Dock Road, Birkenhead; Dripping, Lard, etc.		(Applicable also to traffic consigned by three Associated or Subsidiary Companies.)
No. 284	PREMIER ELECTRIC HEATERS LIMITED, Keeley Street, Birmingham, 9; Electric Heaters, etc.	No. 305	SWAN PRATT & CO., Middlefield Hosiery Works, Factory Road, Hinkley; Hosiery.
	(Applicable also to traffic consigned by one Associated or Subsidiary Company.)	No. 306	WALLIS & LINSELL LIMITED, Kettering; Clothing, etc.
No. 285	SMITH & RODGER LIMITED, 32/38, Elliot Street, Glasgow, C.3; Bees' Wax, etc.	No. 307	WILLIAM BRIGGS & SONS LTD., East Camperdown Street; Dundee, Asphalt felt.
No. 286	SPENSERS (LONDON) LIMITED, 6, London Street, London, W.2; Butane Gas.	No. 308	FREEMAN'S (LONDON, S.W.9) LIMITED, Lavender House, 139/141, Clapham Road, London, S.W.9; Clothing, etc.
No. 287	M. WALKER, Exeter Street, Derby; Preserves, etc.	No. 310	HIPPS (1931) LIMITED, Hipsley Works, Grace Street, Leeds, 1; Clothing.
No. 288	CHERRY TREE MACHINE CO. LTD., Blackburn; Washing and Wringing Machines.	No. 311	HORLICKS LIMITED, Slough; Malted Milk, etc.
No. 289	R. N. COATE & CO. LTD., Nailsea, Somerset; Cider, etc.	No. 312	C. W. HORRELL LIMITED, Rushden, Northants; Boots and Shoes.
No. 290	THE ENFIELD HIGHWAY CO-OPERATIVE SOCIETY LIMITED, 112, Ordnance Road, Enfield Wash; Butter, Cheese, etc.	No. 313	THE NOTTS HOSIERY CO. LTD., 44 and 44A, Gutter Lane, Cheapside, London, E.C.2; Hosiery.
No. 291	SAML. HANSON & SON LTD., 14, Eastcheap, London, E.C.3; Confectionery, Preserves, Provisions, etc.	No. 314	WILKINSON & WARBURTON LIMITED, Caressa House, King Street, Leeds, 1; Clothing and Textiles.
No. 292	ALBERT E. REED & CO. LTD., Maidstone, Kent; Waste Paper.	No. 315	F. W. HARMER & CO. LTD., St. Andrew's Works, Norwich; Boots, etc.
			S. & J. WATTS & CO., Manchester; Clothing, etc.

In the Court of the Railway Rates Tribunal.

RAILWAYS ACT, 1921.

1939 REVIEW OF STANDARD CHARGES AND EXCEPTIONAL CHARGES.

NOTICE IS HEREBY GIVEN that the Railway Rates Tribunal will sit at 10.30 a.m. on Wednesday, the 14th June, 1939, in the Incorporated Accountants' Hall, Victoria Embankment, London, W.C.2, to review the Standard Charges and Exceptional Charges of each of the Amalgamated Companies pursuant to the provisions of Section 59 of the Railways Act, 1921.

Notice is further given that the Accounts and Statements relative to such Review lodged with the Tribunal by the said Amalgamated Companies may be inspected at the Office of the Registrar, Railway Rates Tribunal, Bush House, Aldwych, London, W.C.2, at any time during office hours. Copies of the Statements lodged by each of the four Amalgamated Companies (price 7s. 6d. each, or £1 10s. per set,

post free) may be obtained, on prepayment, from Mr. G. Cole Deacon, Fielden House, 10, Great College Street, Westminster, S.W.1.

Any body or person desiring to make any Objection or Submission relative to the Review must file a Notice of their or his Objection or Submission with the Registrar of the Court on or before Thursday, 1st June, 1939. A separate Notice must be filed in relation to each Amalgamated Company.

Each Notice must be on foolscap size paper and must state concisely the ground or grounds of such Objection or Submission, and must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Railway Rates Tribunal, when a stamp will be affixed at the office. Six additional copies of each Notice must be lodged with the original at the office of the Registrar.

Only the Amalgamated Companies and any body or person filing such Notice of Objection or Submission as aforesaid will be entitled to apply to be heard on the Review.

Dated this 5th day of May, 1939.

T. J. D. ATKINSON,
Registrar.

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following post:—

ASSISTANT ENGINEER

required by the Gold Coast Government Railway for two tours of 12 to 24 months with possible permanency. Salary £475 a year for two years, then £500-£25-£600-£30-£840 a year and then, subject to promotion to a vacancy, by annual increments of £40 to £1,000 a year. Free passages and quarters and liberal leave on full salary. Candidates, aged 25-35, must be Corporate Members of the Institution of Civil Engineers or possess an engineering degree recognised as granting exemption from Sections A and H of the A.M.I.C.E. examination, and must have had practical experience on a British Railway. Preference will be given to candidates who have had, in addition to the above qualifications, practical experience in harbour maintenance.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/8299.

Forthcoming Meetings

May 17 (Wed.).—Nitrate Railways Co. Ltd., (Ordinary General), Winchester House, Old Broad Street, E.C.2, at 11.30 a.m.

May 26 (Fri.).—Société Nationale des Chemins de fer Belges (Annual General), Gare de Bruxelles Midi, door D, Avenue Fonsny, Brussels, at 3 p.m.

LONDON TRANSPORT POSTERS.—London Transport has issued four posters drawing attention to the dwelling places of historic personages which are conveniently accessible from London by Green Line coach services, and which are now open to the public as museums. Knebworth House and Knole House have a handsome poster each by "Goetz." On one of the other posters Down House, where Darwin

wrote the "Origin of Species," Jordan's Meeting House, and Tring Park are represented, with sketches of the personalities associated therewith. The fourth poster deals with Milton's Cottage at Chalfont St. Giles, Queen Elizabeth's Lodge near Chingford, and Quebec House, Westerham, which was the early home of General Wolfe. In all cases particulars are given of routes, fares, and times of opening.

Railway Share Market

All sections of the Stock Exchange have shown an improved tendency this week, partly because of hopes that tension in political affairs is easing, and partly owing to indications that, as a result of the stimulating influence of armament and allied work, industrial activity and the spending power of the public are increasing. Sentiment has benefited from encouraging reports from trade centres and the higher steel output recorded for April and also from expectations that output will be raised further this month.

Home railway securities led the upward movement on the Stock Exchange in the early part of the week and have risen strongly on balance, although there was a moderate reaction on Wednesday following publication of the past week's traffics. The latter created a good impression, but they were somewhat below the optimistic forecasts which had been current in the market. Moreover there is a widespread tendency to await publication of the "Square Deal" report, which is expected shortly, as this should enable the outlook to be more clearly assessed.

Many guaranteed and prior charge stocks have gained several points, but in some instances the upward movement was out of proportion to the demand in evidence. Earlier in the week buyers found it was difficult to obtain stocks in any amount at around the prices then current. L.N.E.R. second guaranteed, reference to which was made in these notes last week, rallied strongly to 61½, while the first guaranteed moved up to 71½, and the first and second preference stocks to 33½ and 13½ respectively. Moreover the 3 per cent. debentures were higher at 66½, as were the 4 per cent. debentures at 86½. L.M.S.R. ordinary transferred up to 14½, the 4 per cent. guaranteed up to 83½, the 4 per cent. preference up to 59 and the 1923 preference up to 40, but best prices touched this week were not fully held. The 4 per cent. debentures were higher at 92½. The market is taking the view that, on present indications, there would seem to be good possibilities of the 1923 preference stock returning to the dividend list in respect of the current year, although it is realised that there would have to be a very substantial increase

in net revenue to permit the full 4 per cent. dividend to be paid. In some quarters the half-yearly figures of the main-line railways are already being estimated, but the estimates vary a good deal, particularly as much depends on the extent to which it may have been possible to effect further economies. Southern preferred rose to 68 at one time, and the deferred to 14½, but later there was a reaction to 67 and 14. The 5 per cent. preference moved up to 91½ and had a firm appearance. Great Western 5 per cent. preference reflected the upward tendency with a rise to 82, and the ordinary stock moved up to 31½, but later reacted to 30. London Transport "C" advanced to 70.

Foreign railway securities were more active than for some time past, but there was very little stock available, despite the good improvement in prices this week. B.A. and Pacific 4½ per cent. consolidated debentures and Argentine Great Western 5 per cent. debentures responded to the payments on account of interest arrears. Gains of several points were recorded by B.A. Great Southern debentures and preference stocks.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1938-39	Week Ending	Traffics for Week		No. of Weeks	Aggregate Traffics to Date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1938		Totals		Increase or Decrease		Highest 1938	Lowest 1938	May 10, 1939	Yield (See Note)			
						This Year	Last Year									
South & Central America	Antofagasta (Chili) & Bolivia	834	7.5.39	11,370	—	1,920	18	246,350	311,380	—	65.030	Ord. Stk.	14	71½	7	Nil
	Argentine North Eastern ..	753	6.5.39	11,831	+	3,052	45	432,740	404,392	+	28,348	—	61½	2	3½	Nil
	Argentine Transandine ..	—	—	—	—	—	—	—	—	—	—	A. Deb.	82	75	70½	51½
	Bolivar	174	April 1939	3,650	—	50	17	15,350	15,600	—	250	6 p.c. Deb.	8	7	7	Nil
	Brazil	—	—	—	—	—	—	—	—	—	—	Bonds.	10	4	6	85½
	Buenos Ayres & Pacific ..	2,801	6.5.39	99,442	+	10,670	45	3,966,257	3,979,938	—	13,711	Ord. Stk.	61½	31½	4	Nil
	Buenos Ayres Central ..	190	22.4.39	\$72,000	—	\$27,700	43	\$4,271,800	\$4,938,800	—	\$697,000	Mt. Deb.	15½	8	14	Nil
	Buenos Ayres Gt. Southern ..	5,682	6.5.39	147,891	+	1,117	45	6,496,216	6,762,802	—	266,686	Ord. Stk.	175½	8½	9	Nil
	Buenos Ayres Western ..	1,930	6.5.39	47,843	+	6,514	45	2,058,809	2,044,479	+	14,330	—	12½	5	7½	Nil
	Central Argentine	3,700	6.5.39	124,302	+	24,860	45	5,287,456	5,428,095	—	140,640	—	13½	5½	9	Nil
	Do.	—	—	—	—	—	—	—	—	—	—	Divd.	6	21½	3½	Nil
	Cent. Uruguay of M. Video ..	972	29.4.39	20,421	—	552	44	806,378	799,382	+	6,996	Ord. Stk.	3	11½	1	Nil
	Cordoba Central	1,218	—	—	—	—	—	—	—	—	—	Ord. Inc.	33½	3½	15½	Nil
	Costa Rica	188	Mar., 1939	23,469	—	12,546	39	230,680	233,338	—	32,658	Stk.	28	22½	22	87½
	Dorada	70	Mar., 1939	14,300	—	100	13	46,400	46,800	—	6,400	1 Mt. Db.	105½	104	103½	51½
	Entre Rios	810	6.5.39	14,994	+	999	45	695,355	640,364	+	54,992	Ord. Stk.	71½	31½	4½	Nil
	Great Western of Brazil ..	1,092	6.5.39	7,300	+	1,500	18	187,200	142,400	+	44,800	Ord. Sh.	3½	1½	1½	Nil
	International of Cl. Amer. ..	794	Mar., 1939	\$213,888	+	\$31,188	12	\$514,284	\$394,574	+	\$119,690	—	—	—	—	—
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	—	—	1st Pref.	6d.	6d.	1½	Nil
	La Guaira & Caracas ..	22½	April 1939	5,880	+	825	18	21,700	19,730	+	1,970	Stk.	8	61½	7½	Nil
	Leopoldina	1,918	6.5.39	15,353	—	1,695	18	355,056	339,374	+	16,682	Ord. Stk.	4	1	15½	Nil
Mexican	483	30.4.39	\$440,400	+	\$22,500	17	\$5,489,900	\$5,432,100	+	\$57,800	—	1½	1½	1½	Nil	
Midland of Uruguay ..	319	Mar., 1939	8,943	—	1,388	39	82,558	86,303	—	3,745	—	7½	1½	1½	Nil	
Nitrate	386	30.4.39	5,353	—	4,741	17	43,471	63,129	—	19,658	Ord. Sh.	52½	19½	15½	71½	
Paraguay Central	274	29.4.39	\$4,219,000	—	\$1,179,000	44	\$13,859,000	\$13,958,000	—	\$2,097,000	Pr. Li. Stk.	60	55½	47½	12½	
Peruvian Corporation ..	1,059	April 1939	61,485	—	8,623	44	670,650	870,864	+	140,214	Pref.	55½	15½	2	Nil	
Salvador	100	29.4.39	\$18,300	+	\$1,550	44	\$97,089	\$890,575	+	\$28,514	Pr. Li. Db.	23	20	19½	Nil	
San Paulo	153½	30.4.39	35,873	—	3,200	17	497,674	537,259	—	39,585	Ord. Stk.	64	28	28½	79½	
Taltal	160	April 1939	1,695	—	1,335	44	29,225	34,985	—	5,760	Ord. Sh.	15½	1½	7½	11½	
United of Havana	1,353	6.5.39	29,439	—	8,947	45	1,063,041	1,128,005	—	64,904	Ord. Stk.	35½	1½	1	Nil	
Uruguay Northern	73	Mar., 1939	852	—	145	39	9,110	8,478	+	632	Deb. Stk.	2	1	2	Nil	
Canada	Canadian National	23,772	30.4.39	841,494	—	26,485	17	11,129,948	11,029,527	+	100,421	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	—	4 p.c.	72	60	69	51½	
	Grand Trunk	—	—	—	—	—	—	—	—	—	4 p.c. Gar.	104	90	98½	41½	
Canadian Pacific	17,186	30.4.39	579,400	—	52,000	17	7,891,800	8,116,000	—	224,200	Ord. Stk.	87½	41½	41½	Nil	
India	Assam Bengal	1,329	20.4.39	36,360	+	194	3	74,872	71,747	+	3,125	Ord. Stk.	81½	70	68½	43½
	Barsi Light	202	20.4.39	3,322	—	690	3	6,840	10,470	—	3,630	Ord. Sh.	60½	54½	50½	51½
	Bengal & North Western ..	2,108	20.4.39	76,808	—	14,452	3	151,465	184,406	—	32,941	Ord. Stk.	311	278	253	77
	Bengal Doonars & Extension	161	20.4.39	2,599	—	1,055	3	5,570	7,318	—	1,748	—	89	83	85	75½
	Bengal Nagpur	3,272	20.4.39	236,400	+	29,622	3	452,025	416,424	+	35,601	—	95½	90	84½	45
	Bombay, Baroda & Cl. India	3,085	30.4.39	269,625	—	1,275	4	797,175	829,350	—	32,175	—	112½	95	100½	6
	Madras & Southern Mahratta	2,957	20.4.39	176,625	+	458	3	351,300	334,346	+	16,954	—	108	97	95½	77½
	Rohilkund & Kumaon ..	571	20.4.39	15,236	—	3,791	3	31,154	38,311	—	7,157	—	308	285	270	61½
	South Indian	2,531½	20.4.39	108,975	—	11,385	3	225,375	231,155	—	5,780	—	104	101	97½	51½
	Beira-Umtali	204	Feb., 1939	73,349	—	13,845	21	399,916	443,755	—	43,839	—	—	—	—	—
Various	Egyptian Delta	623	10.4.39	5,165	—	132	2	5,165	5,297	—	132	Prf. Sh.	78	5/6	1½	Nil
	Kenya & Uganda	1,625	Mar., 1939	279,634	—	4,596	13	782,935	823,885	—	40,950	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	—	B. Deb.	49	41	40½	85½	
	Midland of W. Australia ..	277	Mar., 1939	16,576	—	1,390	40	138,752	131,004	+	7,748	Inc. Deb.	93½	89	90½	47½
	Nigerian	1,900	1.4.39	2,457	—	5,428	1	2,457	7,885	—	5,428	—	—	—	—	—
	Rhodesia	2,442½	Feb., 1939	327,027	—	64,036	21	1,838,478	2,101,534	—	263,116	—	—	—	—	—
	South Africa	13,284	15.4.39	605,292	—	17,422	3	1,364,040	1,338,344	+	25,696	—	—	—	—	—
Victoria	4,774	Feb., 1939	701,353	—	98,195	35	6,217,729	6,441,057	—	223,328	—	—	—	—	—	

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1½

† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being over estimated. The statements are based on the current rates of exchange and not on the par value